



# INCWADANA yokuphila ngokulumkileyo



Ukwenza uphuhliso olusisigxina lube yimpumelelo kumakhaya aseKapa

INKUNKUMA

I-ENEJI

AMANZI

IZITYALO NEZILWANYANA

# INCWADANA yokuphila ngokulumkileyo



Ukwenza uphuhliso olusisigxina lube yimpumelelo kumakhaya aseKapa

Ipapashwe siSixeko saseKapa, 2009

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Le ncwadana ishicilelwe kwiphepha eliLuhlaza elineMicu emiThathu lakwa-SAPPI, isitoko samaphepha angeyongozi kokusingqongileyo enziwe ngemicu yommoba engacocwanga ngeklorin ngenjongo yokuxhasa ukulinywa kwamahlathi ngokuzinzileyo eMzantsi Afrika.



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Ukwenza uphuhliso olusisigxina lube yimpumelelo kumakhaya aseKapa

Olu papasho luqulunqwe lwahlelwa ziiNgcali zoLawulo  
oluZinzileyo kokuSingqongileyo abe-Sustainable Energy Africa and  
AMATHEMBA Environmental Management Consulting. Inkxaso-mali  
nezimvo zifunyenwe kule mibutho ilandelayo:



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ESI SIXEKO SISEBENZELA WENA



## Umbulelo

Le ncwadana, esekwe kwiNcwadi yesiKhokelo sokuPhathwa kokusiNgqongileyo kwiKhaya lokuLawulwa kokusiNgqongileyo i-AMATHEMBA iphuhliswe egameni lesiXeko saseKapa yi-AMATHEMBA kwakunye nequmrhu le-Eneji esisiGxina e-Afrika, ukanti imizobo noyilo lwenziwe ngabakwaDotted Line Design.

Incwadi le ngumzekelo ophathekayo wolawulo lwentsebenziswano, exhaswe ngezimali sisiXeko saseKapa, iSebe lePhondo lemiCimbi yokusiNgqongileyo nokuCetywa koPhuhliso kwakunye neSebe likaZwelonke lemiCimbi yezaManzi namaHlathi kwakunye nenkxaso evela kwinkqubo yeDANIDA yoLawulo lokusiNgqongileyo eziDolophini.

Ukuhlanganiswa kwencwadi enjengale kufune uphando, izigxeko-zincomo kwakunye neengcebiso ezisuka kumajelo amaninzi ohlukileyo. Sivuma ngomkhulu umbulelo inxaxheba enikwe ngabo bonke abathe banegalelo kwiinkcukacha eziqulathwe yile ncwadi.

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ICandelo leziCwangciso lesiXeko saseKapa: ISebe lokuLawula imiThombo yokusiNgqongileyo

IiNkonzo zoNcedo zesiXeko saseKapa: Amanzi, amaSebe eNkunkuma eQinileyo kwakunye neloMbane

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Umbutho wokhuselo ngokusetyenziswa kwamafutha i-LP Gas Safety Association

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Umbutho wokukhathalelwa kohlaza iSteadfast Greening: Grace Stead

IQumrhu le-Eneji esisiGxina e-Afrika: Megan Anderson, Mark Borchers, Leila Mahomed, Audrey Dobbins

i-The Greenhouse Project: Dorah Lebelo



# Ingabula-zigcawu ephuma kuSodolophu waseKapa

Foto: Sififumene ngoncedo lweSiXeko saseKapa



Ubungozi nomngcipheko weenguqu ezikwimozulu kokusingqongileyo nakuqoqosho buqondwa kakuhle lihlabathi lonke.

Kananjalo siye siqonda ukuba imithombo yendalo namafutha enziwe ngeefosili anqongophele.

Ukunqongophala kwamanzi esikubonileyo kwisiXeko saseKapa kusenze sonke sakuqonda ukuba le mithombo asinto esifanele kukuyijonga singayithatheli ngqalelo.

Ukucima kombane okwenzeke kaninzi luphawu lweengxaki zonqongophalo lwamafutha eefosili kwihlabathi jikelele.

Kule minyaka izayo ngokukhula kweemfuno kunye nokunqongophala kwamafutha ezithuthi, kuza kubiza kakhulu ukwenza umbane ngamafutha eefosili.

IKapa lidume kakhulu ngesikumkani seentyatyambo salo, kodwa nesi sikumkani sisengozini ngenxa yotshabalaliso olwenziwa luphuhliso oluqhubekayo kwakunye noxinzelelo kokusingqongileyo olwenziwa lungcoliseko lomoya kwakunye neenguqu kwimozulu.

IsiXeko saseKapa sisebenza nzima ukuzama ukwenza iinkonzo ezinikezwa uluntu zibe zezona zisisigxina nezigcinakalayo kangangoko.

Ukuze sikwazi ukufikelela nokuphumeza iinjongo esizibekele zona ngokunxulumene ne-eneji, amanzi, inkunkuma nolondolozo lweentlobo-ntlobo zeziphili, isiXeko saseKapa sifuna ukuncedwa ngabantu baso.

Incwadana yokuphila NGOKULUMKILEYO iqulethe uthotho lwamanqanaba asebenzisekayo anokuthi amakhaya ngamakhaya aseKapa awathabathe ze awasebenzisele ukwenza amakhaya akhuseleke, kongeke nemali lo gama bencedisa ekuphungeni ukuthwaxeka kokusingqongileyo nendalo yethu exabisekileyo.

La manyathelo aphantwe ngokugqibeleleyo ziingcungcu kwaye abonakalise ukuba angawenza umahluko. Amanyathelo la kugqatyazwe ngawo kulula ukuwaphumeza kwaye angenziwa ngokulula ukuba abe yinxalenye yobomi bemihla ngemihla.

Kananjalo incwadana yokuphila NGOKULUMKILEYO inika ingcaciso kwimibandela ephambili yamajelo okusingqongileyo esijongene nayo silihlabathi kwanalapha phakathi esiXekweni.

Le ncwadana isekwe kwiNcwadana engokusiNgqongileyo emakhaya yequmrhu i-AMATHEMBA engeNgcebiso zokuLawulwa kokusiNgqongileyo kwakunye neNcwadi yeze-Eneji enge-Eneji esisiGxina e-Afrika ebhalwe yaphuhlisa nguSarah Ward. AmaSebe esiXeko sethu aqinisekisile ukuba ingcaciso enikezwa yile ncwadana ichanekile yaye ayiphelelwanga lixesha, inika imboniselo eyiyo yokwenzeka esiXekweni. ISebe lePhondo leNtshona Kapa lemiCimbi yokusiNgqongileyo nokuCetywa koPhuhliso kwakunye neSebe likaZwe-lonke lemiCimbi yezaManzi namaHlathi, anike le ncwadi inkxaso ngezimali, nto leyo ebonakalisa ulawulo lomfelandawonye xa kufuneka kuliwe neengxaki ezinobuzaza zokusingqongileyo esijongene nazo kule mihla.

Ndiqinisekile ukuba bonke abo bathe bathabatha inxaxheba ekudalweni nasekusungulweni kwale ncwadana engokusingqongileyo baya kuziqenya xa bebona indlela evuthwe ngayo. Imiselwe ukuba ibe yintlahla-ndlela yazo zonke izixeko zaseMzantsi Afrika ze ibe ngumzekelo osebenzisekayo kwihlabathi wokuphuhliseka ngokusingqongileyo kwesixeko. Thina, sisisiXeko saseKapa, sikhuthaza bonke abasebenzisi bayo ukuba bayonwabele ze bayisebenzise le ncwadi intle kangaka nephuphuma lulwazi

**Helen Zille**

**USodolophu wesiXeko saseKapa**



Ku-intanethi yiya ku-

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ufumane izinto ezintsha malunga nokusingqongileyo, neenguqulelo ezikwezinye iilwimi, neminye imithombo nezinto ezipapashiweyo ngokusingqongileyo



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# INTSHAYELELO

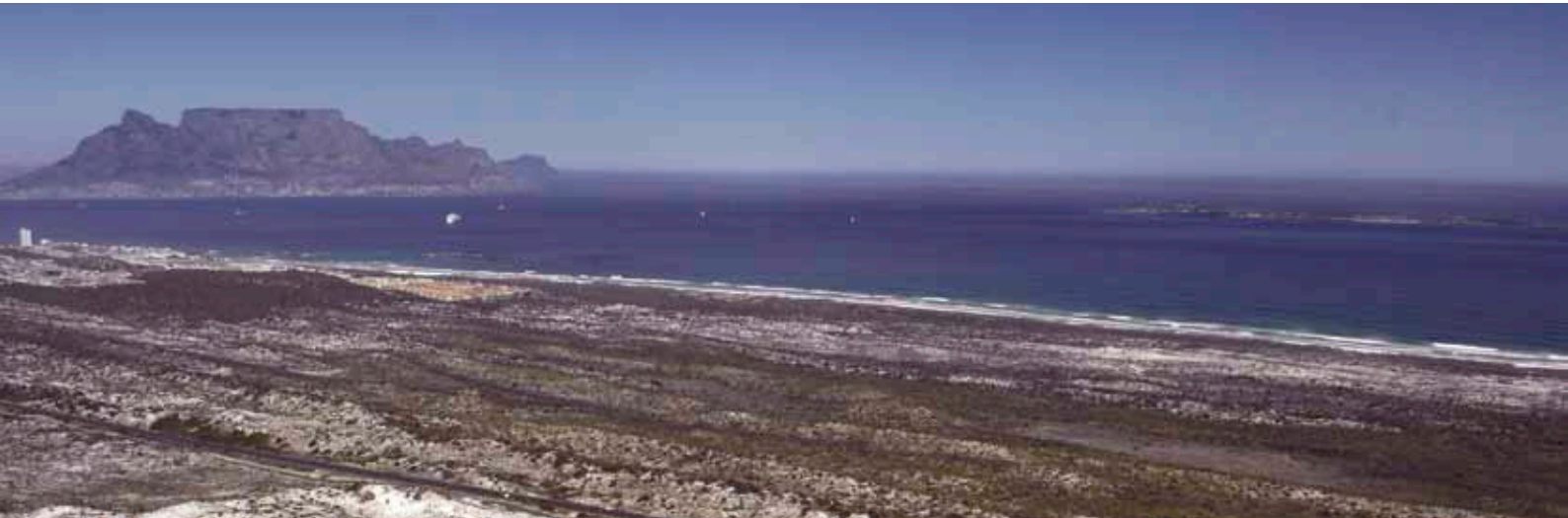
IKapa - Cape Town - Kaapstad – sisixeko esinguNozala (Mother City) wazo zonke izixeko zaseMzantsi Afrika. IKapa sesona sixeko sidala kweli lizwe, intloko-dolophu yowiso-mthetho yoMzantsi Afrika neziko elibalulekileyo lorhwebo nokhenketho. Emva kweeyurana nje ekhululwe eluvalelweni, uNelson Mandela wenza intetho yakhe yokuqala esidlangalaleni kwivaranda ephezulu yeHolo lesiXeko saseKapa – ememezela isiqalo sexesha elitsha ezimbalini zeli lizwe laseMzantsi Afrika. Kodwa ke, mhlawumbi iKapa laziwa kakhulu ngobuhle balo ngokwendalo – iNtab’ eTafile, unxwema leCape of Good Hope kwakunye neCape Flats, nalapho ubomi obubodwa bezityalo bukhoyo. IFeynbhosi, okanye ‘amatyholwana ashinyeneyo’ yimithana nezihluma ezibutyholwana ezingalahli magqabi ebusika nezisoloko ziluhlaza, eyaziwa jikelele ngophawu lwayo olulodwa lobukho kweprotiya phakathi kwayo. IFeynbhos ayikho enye indawo efumaneka kuyo ngaphandle kommandla ogudle unxweme lweKapa, iintaba ezikufuphi nonxweme kwakunye neenkechoyoyi zeentaba ezithile ezithe gqa-gqa phakathi ezweni. USinga-siqithi weKapa likhaya kuma-3-000 eentlobo-ntlobo zezityalo. I-190 lezi zityalo azifumaneki nakwenye indawo apha ehlabathini ngaphandle kwalapha.

IKapa laziwa kakhulu ngobuhle neentlobo-ntlobo zeziphili ezifumaneka kulo. Nakubeni kunjalo, lijongene nemiceli-mngeni yamajelo yokusingqongileyo enzima kakhulu. Uphuhliso lommandla kwakunye nongcoliseko lutshabalalisa amakhaya endalo, nto leyo ebeka emngciphekweni wentshabalalo izityalo ezininzi ezizodwa, amasele anqabileyo nezinambuzane ezihlala kula makhaya. Ukufudumala okukhulayo kwihlabathi okubangelwa kokukhutshwa ziinqwelo-mafutha nemveliso-mbane kuya kuba nefuthe elibi kakhulu kubo bonke ubomi kwisiXeko sethu. Amajelo amanzi aye enqongophala ngokukhawuleza kwaye neetiphu ziyagcwala.

Kananjalo iKapa linophawu olucacileyo lomahluko omkhulu phakathi kwezityebi namahlwempu. Abanye abemi beKapa basebenzisa amanzi, umbane, amafutha nepetroli eninzi kwaye bavelisa inkunkuma eninzi ngokunokude kodlule ummi waseMelika okumndilili, lo gama abanye basahlala kwimizi emininzi enempompo enye yamanzi, besebenzisa amafutha ayingozi anjengeparafini ukupheka.

“Oyena mceli-mngeni mkhulu esijongene naye kule nkulungwane intsha kukuthatha ingcingane ekhangeleka ifihlakele – uphuhliso olusisigxina nolugcinakalayo – siyenze ibe yinto eyimpumelelo yemihla ngemihla kubo bonke abantu beli limiweyo.”

**Kofi Annan, USosiba-jikelele woMbutho weZizwe eziManyeneyo, Matshi 2001.**



Ifoto: Siyifumene ngoncedo lweSixeko saseKapa

## Singenza ntoni ngoku? Singanako ukuguqula izinto senze umahluko?

I-Eneji, amanzi, inkunkuma kwakunye neentlobo-ntlobo zeziphili kokusingqongileyo kwethu Ngalo lonke ixesha ulayita isibane sikagesi, uqhuba inqwelo-mafutha yakho, uvulela amanzi etephini okanye ulahla inkunkuma yakho, wenza isigqibo esichapazela okusingqongileyo. Amajelo endalo – amanzi, amalahle, i-oyile, umhlaba, impepho – aya kutsha okanye aphele ukuba siwasebenzisa ngesantya esingaphezulu kwexesha alifunayo ukuze azizalise kwakhona. Kukho imiqondiso emininzi eyalatha ukuba oku sele kuqalile ukwenzeka.

Ifuthe lokuthwaxeka kwendalo ngamakhaya likhulu kakhulu. Ukuze siqinisekise ukuba sinamajelo oneleyo aza kusithwala – aza kwanela wonke umntu kwimihla esiphila kuyo kwanemihla ezayo – kufuneka siwaphathe kakuhle amajelo ethu, sisebenzise oko sinako ngobuchule nangokufanelekileyo. Uninzi lwethu luyazi ukuba kufanelekile ukuba sikwenze oku, kodwa kumathuba amaninzi asiqinisekanga ngeyona-yona nto ekufanele siyenze nendlela ekufanele siyenze ngayo. Le ncwadana ijolise ekunikeni iinkcukacha malunga namanzi, inkunkuma, i-eneji neentlobo-ntlobo zeziphili kwakunye **nezinto eziphathekayo ubani anokuzenza ukuze kubekho inguqu** – ukukhusela okusingqongileyo, ukulondoloza imali nokwenza amakhaya ethu abe ziindawo ezikhuselekileyo zokuhlala.

Iindaba ezimnandi zezokuba singawenza umehluko. Ngekilowathi-ngeyure (kWh) nganye othintele ukuyisebenzisa, wonge ngaphezulu kwekilogram yeKharbon dayokhsayidi (CO<sub>2</sub>) engeyivulelekile yaya kwi-atmosfera. IKharbon dayokhsayidi (CO<sub>2</sub>) inkqenqqa phambili kwizinto ezinegalelo ekufudumaleni kwehlabathi; nkqubo leyo zithi iinzululwazi ikhokelele ekunyukeni komndilili weqondo lobushushu kwihlabathi ngaphezudlwana nje kwesiqingatha seqondo ngeSelsiyas kule minyaka ingama-30 idlulileyo kwaye lingaqhubeka nokwenyuka eli qondo lobushushu de libe phakathi kwe-1.4 – 5.8 °C ekuzeni kusithela kwale nkulungwane. Ukufakela isibane esibengezelayo esibumbeneyo esine-11 leewathi (CFL) endaweni yesibane esiqhakazelayo esinama-60 eewathi kungonga ama-570kWh kubomi beso sibumbeneyo sibengezelayo – nto leyo inokonga ngaphezulu kwekilogram ezingama-570 zekharbon dayokhsayidi.



## Ukusindisa umhlaba nenzuzo yokwenza oko

Eyona nto imnandi ngokulondoloza amanzi nombane nokucutha inkunkuma kukuba oku kuya kongela wena nesiXeko saseKapa imali eninzi edingekayo! Amanyathelo acetyiswayo kule ncwadi ayafikeleleka kakhulu ngokwamaxabiso kwaye kulula nokuwenza. Xa ithetha into ethile yanexatyiswana eliphezulu, mhlawumbi ukufumana isifudumezi-manzi sesola, ingcaciso uyayinikwa engesithuba sexesha elinokuthathwa siso ukubuyekeza iindleko zokufakelwa kwaso xa ithelakiswa nombane onokuwusebenzisa kwangelo xesha linye.

Enye into ekufaneleke ukuba siyicinge kukuba xa uthenga isixhobo nombane, awuhlawuli nje eli xabiso ulibonayo - koko uyazibophelela ekuqhubekeni uhlawula iindleko zokusisebenzisa esi sixhobo ngalo lonke ixesha sisetyenziswa nguwe. Ezi ndleko zamanzi ne-eneji zikhula ngokukhawuleza. Xa uthenga isixhobo, khumbula ukuba ufumene lithuba elingcono lokutshintshela kwisixhobo esiyakuthi sisebenzise i-eneji namanzi ngendlela efanelekileyo. Kuqhelekile ukuba ezi sixhobo zingaxabiso kakhulu kuyaphi kunezixhobo ezingasebenziseki kakuhle, kwaye ziya kukongela imali ekuhambeni kweminyaka nanjengokuba ii-akhawunti zakho zamanzi ne-eneji ziya kuhla.

## Indlela yokusebenzisa le ncwadana

Ingaba unqwenela ukuthenga isixhobo esitsha? Ukuguqula uhlaziye indlu yakho? Ingaba ufuna ukuphatha kakuhle uhlahlo-lwabiwo mali lwanyanga-zonke lwakho? Sonke singathanda ukuthatha izigqibo ezifanelekileyo ngokuphathelene nolawulo lwamakhaya ethu – ukwenza izigqibo ezingcono ngempilo yethu, ukhuseleko nezipaji zethu, kodwa singakushiya ngasemva okusingqongileyo. Le ncwadana inengcaciso esebenziseka kakuhle kakhulu nezilumkiso ezisebenzisekayo ezinokukunceda uthathe izigqibo ezifanelekileyo ukucutha ukusebenzisa kwakho amanzi ne-eneji nokucutha inkunkuma owukhuphayo. Kananjalo ikwanika ingcaciso ngendlela esinokugcina ngayo indalo yomelele kwaye izintlobo-ntlobo ezininzi kangangoko kwihlabathi lethu. Ezi zinto zinokwenziwa zingakongela imali kwaye zinokuphucula umgangatho wempilo nokhuseleko kwikhaya lakho. Kananjalo ziyakucutha ifuthe lethu elibi kokusingqongileyo.

Le ncwadana iqulethe ingcaciso eninzi kwaye sicebisa ukuba uzinike ithuba lokuyifunda – kunganzima kakhulu ukuzama ukwenza izinto ezininzi ngexesha elinye. Mhlawumbi kungangcono ukuba uzisikele ixesha lokwenza imisebenzi emitsha ngokweeveki.

Incwadana le yahlulwe yangamacandelo amane: Inkunkuma, I-Eneji, Amanzi neeNtlobo-ntlobo zeziphili. Icandelo ngalinye linamacandelwana amane:

- izinto ezicela umngeni eziphathelene nejelo elo;
- izinto ezenziwa sisiXeko saseKapa ukulawula ijelo elo;
- amanzi, i-eneji, inkunkuma neentlobo-ntlobo zeziphili ekhayeni lakho;
- kwakunye namanyathelo asebenzisekayo – yintoni emayenziwe nendlela yokwenza oko – aya kukunceda akongele imali, aphucule umgangatho wokhuseleko ekhayeni lakho, kuliwe nobuhlwempu, kuliwe noku guquka kwemozulu, kuphuculwe ubulunga bomoya ze kukhuselwe indalo yethu nokusingqongileyo.

Imisetyenzana nemifanekiso inikelwe ukuzamazamana nemiba ethile kwanokukhangela lula ulwazi. Imiba yempilo nokhuseleko nayo ishukuxiwe kwicandelo ngalinye kula mathathu. Uququzelelo nomsebenzi wasekuhlaleni ngundoqo wolawulo olulungileyo, amanyathelo aqalisiweyo ambalwa anomdla eKapa abandakanyiwe kwiingxelo zophando ezimfutshane.



Amakhaya aziintlobo ezahlukileyo ajongene nemiba eyahlukileyo yokusingqongileyo. Umzekelo, amakhaya anengeniso-mali eninzi anokufumanisa ukuba asebenzisa umbane omninzi ze afune iindlela anokuziphicotha zokucutha ukusebenzisa kwawo umbane. Ukanti ikhaya elingeniso ingephi lona linokufumanisa ukuba eyona ngxaki yalo inkulu yimpilo nokhuseleko ngenxa yokungakhuseleki kokusetyenziswa kweparafini. Sithemba ukuba le ncwada iya kusebenziseka kwaye ihambelane neemeko zamakhaya ethu onke eKapa, apho lithe icandelo elithile lakhangeleka lingahambelani nemeko yakho, lishiye udlulele kwicandelo elilandelayo – okanye ukhangele ukuba awungeqwalaseli imeko abajongene nazo abamelwane bakho kusini na.

limveliso ezisetyenziswayo ukuze kongeke amanzi ne-eneji ziyafumaneka eKapa kwiivenkile ezithengisa ngezinto zokwakha nakubathengisi bemibhobho nezinto zokutywina nokuhambisa amanzi okanye nakwiivenkile zezinto zombane. Iimveliso 'zohlaza' ezininzi ziyafumaneka kwiivenkile ezinkulu zengingqi ezithengisa ngezinto ngezinto. Iindawo zethu ezithengisa ngezityalo zime ngembambo zizityalo eziziinkulelane kwaye ziyakuba nako ukukunika isikhokelo nengcebiso yokuba zeziphi na izityalo ezinokulungela ummandla wakho.

Eminye yemithombo yolwazi nezalathiso ichaziwe kule ncwadana, kodwa ke isalathiso esipheleleyo malunga nemithombo yolwazi ngokusingqongileyo esiXekweni ingafumaneka kwisaLathiso samaJelo angokusiNgqongileyo esiXeko, kwiSebe lesiXeko loLawulo lwamaJelo angokusiNgqongileyo, kumgangatho wesi-6, e-44 Wale Street, eKapa, inombolo yomnxeba ngu-(021) 487 2284, okanye i-imeyili: [smartliving@capetown.gov.za](mailto:smartliving@capetown.gov.za) okanye ku-[www.capetown.gov.za/environment](http://www.capetown.gov.za/environment).

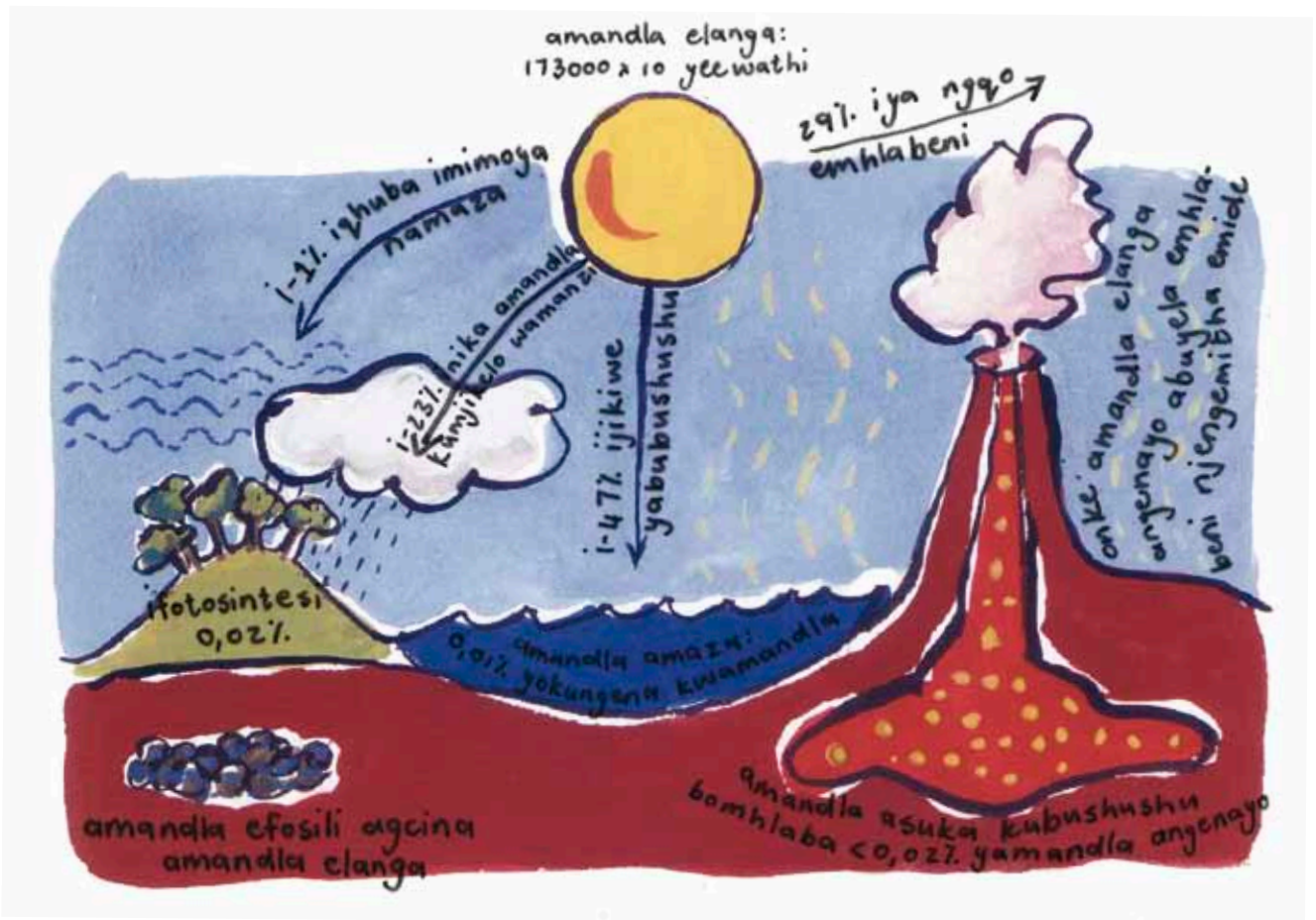
Nceda qaphela ukuba amaxabiso neentlawulo-zinkonzo ezicatshulweyo kwitekisi ngawelixa loshicilelo kuphela, aya kutshintsha ekuhambeni kwexesha.

# I-ENEJI



*Ifoto: Mark Lewis*

Ayikwazeki ukubonakala i-Eneji ngeliso lenyama kwaye ayinazimpawu nazinto zibonakalayo. Sibugonda nje ubukho bayo ngenxa yefuthe layo nezinto ezenzekayo – ubushushu, umbane, amandla – kwaye silibona ixabiso layo ngezinto ezenzayo apha kuthi. Imitha yelanga inika i-eneji kuzo zonke iinkqubo ezigcina ubomi – iguqula izixokelelwano zethu zemozulu, ivelisa ubushushu kwaye ivumela izityalo ukuba zikhule ze zivelise iziqhamo.



## Umjikelo we-eneji

Umthombo we-eneji oshenxiseka ngokulula (njengomoya, ilanga okanye imithi) uthathwa njengokwaziyo 'ukuhlaziyeka'. Amafutha nepetroli anamajelo anqongopheleyo (nanjengokuba ethatha izigidi ngezigidi zeminyaka ukuze aveliswe phantsi kweemeko ezizodwa nezikhethekileyo), njenge-oyile kwakunye namalahle, ajongwe njengamajelo e-eneji 'angahlaziyekiyo'.

## Ukulinganisela i-eneji

LiNzululwazi ziyilinganisela i-eneji ngemilinganiselo yemivo ebizwa ngokuba zijowule eziyimilinganiselo yomsebenzi owenziwa ngumbane ze kubonakaliswe izixa njengeetoni ze-oyile. I-eneji idla ngokuchazwa njengombilini ovumela ukuba kwenziwe umsebenzi – isantya i-eneji esetyenziswa ngaso silinganiselwa ngokwewathi (W). Iwathi enye ilingana ne-eneji edliwe ngokwesantya esiyijowule enye ngomzuzwana.

Ikilowathi e-1-ngeyure (kWh) li-1 000 leewathi ezisetyenziswe ngeyure

Okanye iiwathi ezingama-500 zisetyenziswe ngeyure ezi-2.

Okanye iiwathi ezingama-2 000 zisetyenziswe ngesiqingatha seyure.

imegawathi = ne-1 000 000 (isigidi esi-1) zeewathi = ne-1 000 zee-kilowathi.

## 'Imitha yelanga yakudala' – amafutha eziphili zamandulo ezaba lilitye

Uninzi lwamandla ethu lusuka kumafutha eziphili zamandulo ezaba lilitye – amalahle, igesi kwakunye ne-oyile ekhethekileyo, nezithe kule mihla zangamajelo abaluleke kakhulu kwiplanethi yethu. Imithombo ye-oyile oluthe ushishino lwethu lwaxhomekeka kuyo ingamashumi ezigidi zeminyaka ubudala, isukela kumalwandle akudala ayenyakazela sisityalo esincinane (esasinokubonwa kuphela zizibonakakhulu) nobomi bezilwanyana zangoko. Zathi zakufa ezi zinto ziphilayo zenza udaka olutyebileyo lweziphili olwahlala emgangathweni wolwandle. Kwizigidigidi zeminyaka, ezi zoleko zacinizelwa zaxinzelelwa yintlenga engaphezu kwazo, nto leyo yenza zaguquka ngokucothayo zaba sisintsokotho semixube yeehidrojeni nembumba yeeharbon esizazi ngoku ngokuba yi-oyile. Kwangale ndlela inye, amalahle eenzeka ngenxa yehlathi elangcwabekayo ngaphantsi emathunjini omhlaba. Amafutha eziphili zamandulo ezaba lilitye ngokufutshane yi-eneji esuka elangeni – i-eneji yesola – eyagcinwa kwinkqunto yesityalo. Ngamanye amaxesha amafutha eziphili zamandulo ezaba lilitye abizwa ngokuba 'yimitha yelanga yamandulo'.

### Ezinye zezinto esinokucinga ngazo

- Ushishino lwethu xa lulonke luxhomekeke kwi-oyile. UMzantsi Afrika awunayo i-oyile yendalo. Le nto isenza ukuba sixhomekeke kakhulu kwamanye amazwe ngeli jelo libaluleke kangaka. Le nto ikwathetha ukuba yonke imali esiyichitha e-oyileni iyemka kwisiXeko sethu nakwilizwe lethu.
- Imithombo yamalahle neye-oyile inesiphelo. Ngenye imini iya kutsha iphele tu ngoko ke kufuneka sizilungiselele oko. Kuqikelelwa ukuba imithombo yamalahle eMzantsi Afrika ingagcinakala eminye iminyaka eli-150 ukuya kwengama-200. Imithombo ye-oyile yona kuqikeleleka ukuba iyakutsha iphele kwisithuba seminyaka engama-40 ukuya kwengama-50 ukanti abahlalutyi baqikelela ukuba iya kunqaba ngokunqaba imithombo ye-oyile lingekazukufika nokufika kwa-elo xesha, nto leyo eya kwenza ukuba lixhome kakhulu ixabiso le-oyile.
- Itheknoloji eyenzelwe ukusebenzisa amafutha eziphili zamandulo ezaba lilitye ayisebenzi ngendlela efanelekileyo. Ubuninzi bepetroli esiyisebenzisayo iguqulwa ibe bubushushu obuyi-eneji (elahlekayo). Ilahleko kwinkqubo yokuguqulwa xa umbane usenziwa naxa uthuthwa ithetha ukuba ngethuba ulayita isibane sakho iya kuba sisi-2% kuphela se-eneji efumaneka emalahleni esebenzileyo
- Ukutshisa amafutha eziphili zamandulo ezaba lilitye kukhuphela kwi-atmosfera iiges ezinobungozi. Oku kungabanga ungcoliseko lwengingqi kwaye kungakhokelela kwizifo zobunzima bokuphefumla nezinye. Kananjalo kusenokuba nefuthe elibi kokusingqongileyo. Imbumba ye-Oksijeni ene-athom yeSulfure (SO<sub>2</sub>) ephuma xa bekutshiswa amalahle inyibilika kumphunga wamanzi, nto leyo yenza i-asidi yemvula. I-asidi yemvula iba nefuthe elibi kwizityalo nakwizilwanyana xa ithe yawela emhlabeni. Kungoku nje eyona ntsongelo yomngcipheko wentshabalalo enkulu ziinguqu zemozulu okanye kukufudumala okukhawulezayo kwehlabathi. Ukwanda kokutshiswa kwamafutha eziphili zamandulo ezaba lilitye kule minyaka ilikhulu idlulileyo kucingelwa ukuba yenye yezona zinto zibe negalelo kakhulu kule meko.



*ligesi zezindlu zohlaza zeglasi zandiswe zizinto ezenziwa ngabantu kule minyaka ili-100 idlulileyo. Obu bubushushu obugcayiseleyo nobungumgibe kwi-atmosfera yethu benza ukufudumala okungamkelekanga kwihlabathi.*

### I-eneji nenguqu kwimozulu

Umdlili weqondo lobushushu awutshintshanga ngaphantsi kweqondo elinye ukwenyuka okanye ukwehla kule minyaka ili-10 000 idlulileyo. Kule minyaka ili-100 idlulileyo, umndlili weqondo lobushushu emhlabeni unyuke malunga ne-0,5°C kwaye kulindeleke ukuba iqondo lobushushu emhlabeni lenyuke nge-2 ukuya kwi-6° ngeSelsiyas kule minyaka ili-100 izayo. Kuqhubeka ntoni kanye kanye?



Uninzi lwe-eneji yoMzantsi Afrika lusuka emalahleni. Umgangatho wamalahle oMzantsi Afrika awuxhomanga kuya phi, nto leyo eyenza ukuba izixa ezikhulu zeCO<sub>2</sub> zikhutshelwe kwi-atmosfera xa amalahle athe atshiswa. Umntu ngamnye eMzantsi Afrika ukhupha malunga neetoni ezisi-8 zeCO<sub>2</sub> unyaka ngamnye. Oku kuphindaphinda kabini umndilili weetoni ezi-4 zeCO<sub>2</sub> ezikhutshwa ngumntu ngamnye kwihlabathi jikelele. Umndilili wentsalela yamazwe elizwekazi lase-Afrika ukhupha umndilili wetoni e-1,1 yeCO<sub>2</sub> umntu ngamnye.

Umndilili weKharbon ekhutshwa ngumntu ngonyaka

imbalela kummandla lo. Iintlekele zendalo ezinjengemililo yamadlelo nezikhukhula kulindeleke ukuba zande ngokukhawuleza kwaye zibe zikhulu. Uphando olwenziwa kwiYunivesithi yaseKapa lubonisa ukuba iqondo elinye obuya konyaka ngalo ubushushu – ekulindeleke ukuba kwenzeka kwiminyaka engama-50 ezayo – mhlawumbi kungakhokelela ekwenyukeni kweziganeko zemililo nge-29%. Ngokubanzi iKapa liya koma kubalele, nto leyo eyakwenza kulandele ukunqongophala kwamanzi. Ukuphazamiseka kolimo kuya kubanga ukufudukela okongezekileyo kwabantu ezidolophini, nto leyo eya kongeza uxinzelelo kubukho bemithombo yokutya. Iinkqwithela nezikhukhula, xa zithe zenzeka, ziya kuba nobungozi, zenze umonakalo omkhulu kududyuzwe neemvula ezingaphaya. Izimbo ezitsha zezulu ziya kwenza ukusasazeka kwezifo, izigulo ezinxulumene nobushushu kwakunye nezigulo zokuphefumla. Iziphili ezincinane kakhulu ezisulelayo nezisasazeka emanzini nasekutweni ziya kwanda. Kulindeleke ukuba imalariya isasazeke kakhulu kulo lonke ilizwe lethu.

IKharbon dayokhsayidi (CO<sub>2</sub>) yenye yeegesi ezikwi-atmosfera yethu. Ngo-1999 amanqanaba e-CO<sub>2</sub> ebephezulu nge-32% kunamanqanaba ayekho phambi kwenkqubo yoshishino lwezizwe. Iingcaphephe zeenzululwazi zehlabathi ezikwiQumrhu leziRhulumente eziBambiseneyo ngokuPhathelele kwiiNguqu kwiMozulu (IPCC) zigqibe ekubeni ukwanda kwentlanganisela yeegesi kwi-atmosfera ziziphumo zezinto ezenziwa luluntu. Ekwandeni kweegesi zendlu yohlaza, kuthiwa ama-60% eKharbon dayokhsayidi akhutshwa xa kutshiswa amafutha ezilwanyana zamandulo ezaba litye. Ama-40% la ashiyekileyo yigesi yemethane (CH<sub>4</sub>) esuka ezitiphini, inaytriyas okside (N<sub>2</sub>O) esuka kwezolimo nechlorofluorocarbon (CFCs) ezisetyenziswa kwizikhenkcisi nakwiizixhobo ezitshisa ulwelo ngoxinzelelo lomoya. Ukwanda kwezi gesi kubangela ukuba ubushushu bubambeke bujikeleze umhlaba.

Isiphumo sale nto ayingomrhiba nje wokufudumala. Ukwanda kwamaqondo obushushu kushushubeza amalwandle ethu, kuguqula amaza kutshintshe neendlela umoya ohamba ngazo, yonke loo nto ibe nefuthe kwimozulu yethu. Imikhenkce ekumiselwe kuyo incam yezwe sele iqalile ukunyibilika kwaye loo manzi aloo mikhenkce enza ukuba ubunzulu bamalwandle buye bunyukela phezulu nto leyo iya kwenza ukuba iindawo ezomileyo ezisezantsi zogqunyelelwe ngamanzi, iziqithi ezithile ziya kuphela emehlweni. Nezinye izenzeko ezininzi ezibuhlungu zezulu ziya kwenzeka.

Iinzululwazi eKapa zilindele ukuba izityalo ezikwisikumkani sethu seentyatyambo siya kuphela njengokuba kubakho

## I-eneji nokungcoliseka komoya kwingingqi yethu

Ukutshiswa kwamafutha eziphili zamandulo ezaba litye akupheleli nje ekusichaphazeleni ngokuphathelele kwinguquko zemozulu kwihlabathi. Ungcoliseko lomoya lwengingqi olubangwa kukutshiswa kwamafutha eziphili zamandulo ezaba litye kukwanegalelo elibi kwimpilo yethu nakokusingqongileyo. Ungcoliseko lomoya kwingingqi yethu luyingozi kakhulu, ingakumbi ebantwaneni nasebantwini abadala okanye abakhokhobayo. Abantwana abaya esikolweni behamba ecaleni kweendlela ezixakekileyo bakhathazwa kukunuka komsi okhutshwa ziimoto kwaye abo kumawabo kusetyenziswa iparafini, amalahle neenkuni xa kuphekiwe okanye kubaselwe ukuzifudumeza emakhaya, baya kuchaphazeleka lolu ngcoliseko lomoya lwasezindlwini. Inkungu emdaka yaseKapa ibangelwa ngumsi ophuma kwii-ekzo zeemoto zethu. Ezi gesi zijika zibe mdaka xa zidibene nelanga.

Foto: Tamara North



### IProjekthi yoLawulo lokuLunga koMoya kwakunye nesiCwangciso-qhinga sokujongana noNgcoliseko loMoya eKhayelitsha (KAPS)

UmThetho wobuLunga boMoya (ka-2005) ukhusela ilungelo lethu lokubanokusiNgqongileyo okucocekileyo nokuphilileyo. Umthetho lo ufuna ukuba isiXeko sakhe iQhinga loLawulo lobuLunga boMoya (AQMP), nethe idrafti yoku yapapashwa ngoMeyi ka-2005 ukuze uluntu lube nokwenza amagqabantshintshi. Eyona projekthi ibalulekileyo yesiXeko yeyesiCwangciso-qhinga soNgcoliseko loMoya eKhayelitsha(KAPS). Iziphumo zokuphononongwa kwamaqondo eparticulate (PM10) eKhayelitsha ngonyaka ka-2004 zibonakalise ukuba ezi mpawu eKhayelitsha zingama-90% ngaphezulu kombindi wedolophu kwaye zingama-70% ngaphezulu kwaseGoodwood.

Ngeenjongo zokuphendulana nolo celo-mngeni lala maqondo e-PM10 aphezulu afunyenweyo, isiXeko saseKapa sigqibe ekubeni siseke iKAPS. Iinjongo zale projekthi kukufumanisa owona mthombo uphambili wee-PM10 ze kwenziwe umsebenzi wophando lomalathisi-ndlela ukuze kucuthwe amaqondo ongcoliseko-moya eKhayelitsha. Iprojekthi le iya kuhlola amashishini namakhaya angama-600. Abantu basekuhlaleni ngabo abaza kuqeqeshelwa ukwenza olo phando babale nezithuthi ezindleleni. Iziphumo zophando ziya kusetyenziselwa ukufumanisa indlela yokusebenzisa iqhinga eli gabalala ukuze kucuthwe ungcoliseko moya kwimimandla enamatyotyombe.



ifoto: Mark Lewis

# I-ENEJI KWISIXEKO SETHU

IKapa lizingenisela udumo lokwaziwa njengesixeko esithatha amanyathelo agqibeleleyo kwanokuhlala indlela ngemakwenziwe ngophuhliso olusisigxina lwe-eneji. IsiXeko saseKapa ibe sisixeko sokuqala sase-Afrika ukwakha isiCwangciso-qhinga sokuGuquka kweMozulu ne-Eneji (ngo-2005). Esi sicwangciso sisekela uluntu lwesiXeko umbono wokuhanjiswa nokusetyenziswa kwe-eneji esisigxina nehambisana ngokufanelekileyo nangokuphilileyo nokusingqongileyo. Isicwangciso esi sisekele icandelo elingundoqo lezothutho, unikezelo-mbane, abahlali, urhulumente norhwebo kwakunye noshishino izinto ekujoliswe kuzo ezinokubalwa ngokucacileyo.

## Izinto eziphambili ekujoliswe kuzo sisiCwangciso-qhinga seKapa sokuGuquka kweMozulu ne-Eneji

- i-10% lawo onke amakhaya ayakuba enezifudumeze-manzi zesola (SWH) ngonyaka ka-2010
- ama-30% awo onke amakhaya ayakuba esebenzisa izibane ezibengezelayo ezibumbeneyo (CFLs) ngonyaka ka-2010 ze ibe ngama-90% amakhaya ngonyaka ka-2020
- Zonke izindlu ezifumaneka ngokoncendo-mali lukarhulumente ziyakuba zisilingiwe ngonyaka ka-2005
- I-eneji ehlaziyekayo iya kuquka i-10% yayo yonke i-eneji esetyenzisiweyo sisiXeko ngonyaka ka-2020

## Ingaba isukaphi i-eneji yethu?

Kumathuba amaninzi imijelo yokufumana amafutha eKapa mide ngohlobo olungathethekiyo. **I-oli ekwada** iziswa apha ngeenqanawa, ihamba umgama okwisithuba se-10 000 km ngobude, ikakhulu isuka eMiddle East. Impontshelwa elunxwemeni eSaldanha Bay, ndawo leyo ekumgama we-120 km ngasentla kweKapa, ze ke ihanjiswe ngemibhobho ukusiwa kumzi wokucokisa okumgama we-15 km ukusuka embindini wesixeko, kwaCaltex eMilnerton. Ukusuka kulo mzi wokucokisa, kukhutshwa iindidi zamafutha alulwelo – ipetroli, idizili, iparafini nerhasi – zisiwe kwiidepho ezithatha izambuku nakubasazi abancinane.

**I-eneji yombane** itsalwa kwisixokelelwano seentambo zikazwelonke zentsimbi ezizisa umbane – ama-95% aloo mbane uveliswa ecaleni kwemigodi yamalaha eMpumalanga, ze i-5% yona iveliswe eKoeberg Nuclear Power Station, ezinze eWest Coast, kumgama wama-45 km ngentla kombindi wedolophu.

Umbane usasazwa ugqithiselwa ngesixokelelwano seentambo zombane sika-Eskom ze ekugqibeleni usasazelwe kwimizi-mveliso, kumashishini ngamashishini nasemakhaya, ukhutshwa ngqo ngu-Eskom okanye sisiXeko esineempepha-mvume zokusasaza umbane. Ilahleko ye-eneji ebalulekileyo (ingade iye kuma kwi-15% ukuya kuma-20%) yenzeka ngethuba lenkqubo yokusasazwa nokugqithiselwa kombane.



*Ukugqithiselwa kombane ukusuka kwiziko lombane ukuya emakhaya*

**Iparafini, igesi, ipetroli nedizili** zonke zenziwa nge-oli ecokisiweyo. **Amakhandlela** enziwa ngamafutha (isiveliso esilisoloty se-oli). Isitokhwe **samalahle** sona sihanjiswa ngololiwe ukusuka kumajelo kazwelonke. Asuka eMpumalanga ixesha elininzi ehamba umgama omalunga ne-1 500km.

Uninzi lwe-eneji esiyisebenzisayo njengepetroli, iparafini negesi inikezelwa kuthi kusetyenziswa iinkampani zabucala nabathengisi abathengisa ngemiyinge . Urhulumente kazwelonke uyawalawula amaxabiso ekuthengiswa ngawo la mafutha. Umgaqo siseko umisele into yokuba luxanduva lwesiXeko ukufaka nokwahlula umbane negesi.

## Umbane

Okwalo mzuzu umbane waseKapa unikezwa isiXeko ngu-ESKOM. U-Eskom unikezela ngqo kubathengi, ngokugunyaziswa sisixeko, malunga nama-25% ombane. Oshiyekileyo umbane unikwa isiXeko saseKapa siwusazwe ngesaso isixokelelwano.

## 'IREDS: Ukusasazwa koMbane eNgingqini



Uwiso-mthetho luphunyaziwe ukuze kusekwe Abasasazi beNgingqi Bombane (iREDs), kujoliswe ekuhlenganiseni abasasazi abaninzi abanamaphepha-mvume ukuze benze isixokelelwano sabasasazi esisebenza ngokufanelekileyo nesabelana kakuhle nangokulinganayo ngenzuzo. Okwangoku kukho malunga nama-200 abasasazi abasemthethweni abasebenzisa izintlu ezahlukeneyo zamaxabiso angaphezulu kwama-2 000. Ukunqongophala kwengcaciso ngokwasemthethweni ngokuphathelele kunxulumano phakathi kweREDs kwakunye noMasipala, ngakumbi ngokuphathelele nemfanelo kaMasipala ngokomgaqo-siseko yokuba umasipala asasaze umbane kubambezele ukwakhiwa kweREDs esebenza ngokufezekileyo. Kodwa ke urhulumente kazwelonke uzibophelele kwinkqubo yeREDs kwaye unethemba lokuba iinzima ngokomthetho ziza kusonjululwa. IREDs ibonakala ngathi iveza amathuba okukhuthaza isithethe esitsha sokunikezelwa kweenkonzo ze-eneji – ikhuthaza ukunikezwa ngegesi, i-eneji ehlaziyekayo, uveliso oluncinci lombane kwakunye nezifudumezi-manzi zesola ezihambisana neendlela zakudala zokusasazwa kombane.



Ifoto: Mark Lewis

### Umbane olijelo elihlaziyekayo – ifama iDarling wind

Kananjalo icandelo lokwakha ngokutsha umbane lenze kwakwazeka ukuveliswa kombane ngaBavelisi Bamandla Abazimeleyo. IDarling ezinze malunga nama-70 km ngasentla kweKapa linxiwa lokuqala lefama yoshishino enephiko lomsinga womoya lokwenza i-eneji eMzantsi Afrika. Le fama iza kuphuhlisa kwiqela lezigaba, isigaba sokuqala kukukhupha isixa se- 5,2MW kwiinjini zomsinga womoya ezine ze-1,3MW. Ekugqibeleni iyakukhupha isixa se-13MW kwiinjini zomsinga womoya ze-1,3MW. Iprojekthi le kubonakele ukuba inokusebenza ngokorhwebo ekubeni kuye kwathi ngokwamkelekayo kwafikelelwa kwisiGqibo sokuThengwa kwAmandla (PPA) phakathi komphuhlisi kwakunye nesiXeko saseKapa. Isixeko siza kuhlawula umrhumo ukuthenga umbane ohlaziyekayo, njengexalenye yokuzibophelela kwesiXeko ekufikeleleni kwinto esijolise kuyo yokuba ne-10% ye-eneji ehlaziyekayo ngonyaka ka-2020. IsiXeko sizimisele ukuthengisela umbane otsalwa kwindalo abathengi abasiqondayo isidingo sokuthatha amanyathelo angawo ngokuphathelele noku-fudumala kwehlabathi.

Isigaba so-1 seDarling kukushenxisa i-13,2 GWh lokuveliswa kombane obaselwe ngamalahle nyaka ngamnye – nto leyo eya kuthoba uxinzelelo kwisixokelelwano sethu sikazwelonke kwanokucutha uncoliseko lokusingqongileyo. Izingcolisi eziyakuphetshwa kwanamajelo ayakongiwa kwixesha xa lilonke leprojekthi le ziquka:

- ukukhutshwa kweetoni ezingama-258 192 zeKharbon dayokhsayidi
- iitoni ezili-2 234 zesalfa dayokhsayidi
- iitoni ezingama-1 111,4 zenitrik oksayidi
- iitoni eziyi-58 zeeparticulate
- iitoni ezili-142 560 zamalahle

- iitoni eziyi-42 240 zengququ yeentsimbi kwakunye nothuthu oluphephethekayo
- iilitha ezingama-369,6 yezigidi zamanzi

Umbane 'otsalwa kwimithombo yendalo' uya kuthengiswa ngokomrhumo kwaye uza kudinga inkxaso yabemi abazikhathazayo nabezoshishino. Imibuzo ephathelele ekuthengweni kombane otsalwa kwindalo ingabhekiswa kuMphathi weGreen Energy Project, Inkonzo zoMbane, IsiXeko saseKapa, PO Box 82, Cape Town 8000 okanye ngomnxeba ku-(021) 446 2015. Kananjalo imibuzo ingathunyelwa ku- brian.jones@capetown.gov.za.

## Umbane wamandla enyukliya

Isi-5% somxube wesizwe wombane wethu uvela kwiziko lamandla enyukliya loMzantsi Afrika ekukuphela kwalo, iKoeberg esecaleni kweKapa. Urhulumente no-Eskom bajonge ukuphuhlisa nangakumbi umthamo wenyukliya ngokuphuhliswa kwetheknoloji yeengqalutye ipebble-bed.

Amakhala amakhulu angokuguquka kwemozulu okubangwa yintlanganisela yeKharbon dayokhsayidi kwi-atmosfera (nalapho ukuveliswa kombane obaselwa ngamalahle ingunobangela omkhulu) abangele ukuba abanye abantu bakholelwe ukuba amandla enyukliya angasisisombululo sethutyana esibalulekileyo. Ukungxamiseka kwesidingo sokuthatha amanyathelo angqingqwa ukuthibaza ukukhutshwa kweKharbon kuyinene enkulu. Kodwa ke abanye basakhathazekile kakhulu malunga neengozi zenkunkuma yenyukliya kwaye abasiginyi ncam isimo oluya kuba kuso ushishino xa kuthe kwakhethwa olu hlobo lwe-eneji. Kumawaka-waka ale minyaka yenyukliya, 'inqanaba elisezantsi' lenkunkuma yenyukliya liseyityhefu eyingozi kakhulu, lo gama kungekho nenye indawo ehlabathini ekugunyazisayo ukulahlwa kwenkunkuma yenyukliya 'ekwinqanaba eliphezulu' – nkunkuma leyo inokuba namandla okutshabalalisa ngokuqhushumba emva kweminyaka engaphaya kwe-100 000+ ikhona. Inkunkuma 'ekwinqanaba elisezantsi' yaseKoeberg ingcwatywe emathunjini omhlaba eVaalputs eNamaqualand. Yona inkunkuma 'ekwinqanaba eliphezulu' isahlali elugcinweni kweli ziko laseKoeberg. Amalahle abaselwa ngomlilo kwakunye netheknoloji yenyukliya zisekelwe ekusetyenzisweni kwamajelo aphelayo (amalahle neyuranium) kwaye zinxulunyaniswa nobungozi obudlululileyo kokusingqongileyo. Izisombululo zexesha elide ze-eneji kufuneka zijonge ekuphuhliseni kwetheknoloji zemithombo ye-eneji ezicocekileyo nezihlaziyekayo.

## Ukusuka kwiintambo zamandla ombane ukuya ekhaya

Amakhaya amaninzi eKapa afumana umbane kwisixokelelwano seentambo zentsimbi ezizisa umbane. Zibini izixokelelwano zokuhlawulela umbane. Ngokwendlela endala, eyiyinkqubo yeemeta zesikweliti, unikwa umbane inyanga yonke ze ufumane i-akhawunti yaloo mbane ngempela-nyanga, ngokuxhomekeke kubungakanani bombane owusebenzisileyo. Inkqubo yemeta ehlawulelwa ngenxeni engaphambili ifuna ukuba uthenge umbane kwasekuqaleni – le nto iyafana ne-airtime oyithengayo phambi kokuba utsale umnxeba kwiselula yakho.

Ixabiso lombane lilawulwa nguMlawuli woMbane kaZwelonke eMzantsi Afrika (NERSA). Ngeenjongo zokucutha intlupheko, urhulumente wenze isibonelelo sesixa sombane esingama-50 kWh esithi sinikwe simahla loo makhaya asebenzisa umbane omncinci. EKapa, **umbane wentsusa wasimahla** (FBE) unikwa naliphi na ikhaya elithenga umyinge wombane wama-400 kWh ngenyanga.



Ifoto: Mark Lewis



Ngokomthetho akuvumelekanga ukutshintsha iintambo okanye ukuphazamisana nokusebenza kwebhokisi yombane. Le nto ingakhokelela ekucinyelweni umbane ze uhlawuliswe imali yokuphinda ufakelwe umbane. Okwangoku kwabaqalayo ukona le ntlawulo imalunga nama-R2 000 apho kuye kwaphazanyiswa ukusebenza kwebhokisi yombane kwaze kwafuneka ukuba makuphinde kufakwe enye ibhokisi, ukanti xa kuthe kwenziwa ukuba ibhokisi mayingabali, kodwa ibe ingonakaliswanga, intlawulo imalunga ne-R1 000. Ukunyikinyela, uphazamisana nokusebenza kwebhokisi yakho yombane kukwayingozi enkulu kwaye ungakubhahhisa nombane okanye wenzeke umlilo okanye uzenze zombini ezi zinto.zombini ezi zinto.

## Ukuqonda i-akhawunti yakho yombane

Imali nesixa sombane owusebenzisa kwinyanga nganye kwisithuba seenyanga ezili-12 sisetyenziselwa ukubala umyinge wokusebenzisa kwakho umbane ngenyanga. IsiXeko sazi ngale nto ukuba usebenzisa umbane omninzi okanye omncinci ummo wakho. Amaxabiso ombane ayaphononongwa ze andiswe ekuqaleni kukaJulayi minyaka le. Amaxabiso ombane abizwa sisiXeko alawulwa nguMlawuli we-Eneji kaZwelonke eMzanzi Afrika. Njengoko u-Eskom efuna ukuhlaziya amaziko amandla ombane ukuze aphinde asebenze kwaye ukwafuna nokwakha nezinye iindawo zokuvelisa umbane, kulindeleke ukuba amaxabiso ombane axhume kakhulu kuyo yonke indawo eMzantsi Afrika kule minyaka imbalwa izayo.

**Owasekhaya 1** (abasebenzisa umbane omninzi): Ukuba ikhaya lakho lithenga umbane ongaphezulu kwama-600 kWh ngenyanga, uya kuhlawuliswa umrhumo wosuku we-R2,39. Le nto yenzeka nokuba umbane usetyenzisiwe okanye awusetyenziswanga. Ngaphezulu, i-kWh nganye ethengiweyo (intlawulo ye-eneji) iya kukutya iisenti ezingama-36,72 xa kudityaniswa nerhafu-ntengo (VAT).

**Owasekhaya 2** (abasebenzisa umbane omncinane): Ukuba ikhaya lakho lisebenzisa umbane ongaphantsi kwe-600 kWh ngenyanga, awusayi kuhlawuliswa umrhumo wosuku, uya kuhlawula nje intlawulo ye-eneji equka imadlana encinci engumrhumo wenkonzo eyakhelwe apha kweli xabiso. I-kWh nganye oyisebenzisileyo iya kuxabisa ama-48,94 eesenti xa kudityaniswa nerhafu-ntengo (VAT). Nakubeni nje eli xabiso likhangeleka lingaphezulu kwelabantu abasebenzisa umbane omninzi, enyanisweni akunjalo kuba akudityaniswa namrhumo wosuku apha. Ukuba ikhaya lakho lithenga umyinge wama-400kWh nangaphantsi ombane ngenyanga, uya kufumana ama-50 kWh simahla, kanye ngenyanga.

isibonelelo sasimahla sombane wentsusa

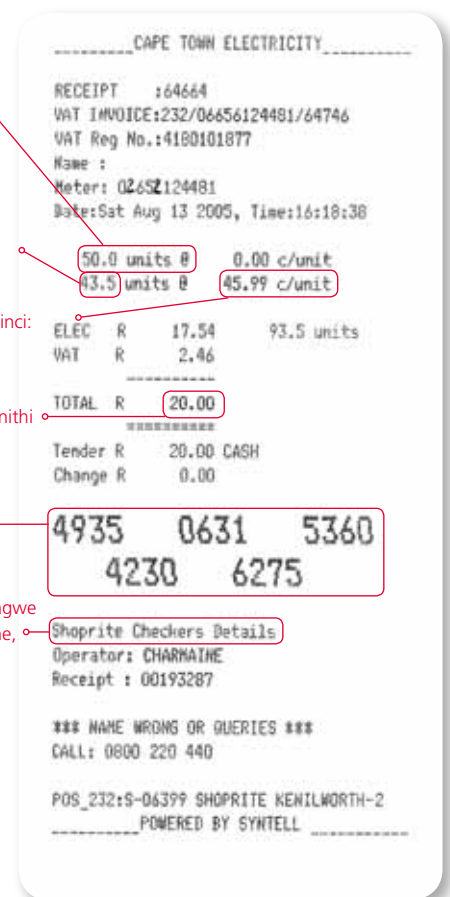
iiyunithi ezithengiweyo

usebenzisa umbane omncinci: umlinganiselo wekhaya 2

isixa-mali seyunithi ezithengiweyo

amanani okufaka umbane

umbane uthengwe esuphamakethe, evenkileni yengingqi, esikroxweni, eposini



(Iireyithi ezikowutiweyo zesesityuba esisuka kuJulayi 2007ukuya kuJuni 2008)

## Imitha yombane wesikweliti

ukusetyenziswa kombane kwiintsuku ezibhalwe kwimitha

isixa sombane osetyenzisiweyo (umyinge ngosuku)

Account Details as at 09/03/2007 A/C No 116227190 Page 2 of 2

ELECTRICITY ( Period 09/02/2007 to 07/03/2007 - 27 Days ) (Actual Reading) R C R C

AT AVOLON,38 TIVERTON ROAD PLUMSTEAD / ERF 71970  
 Meter No: 315869 / Consumption 569.000 KWH / Daily Average 21.074 KWH

\* Domestic 1 (1) 569.0000 KWH @ R 0.3050 173.55  
 \* Service Charge 53.73

isixa esityalwayo sombane

227.28

Add 14% VAT on Amounts marked with \* above 14% VAT 31.82

umlinganiselo womrhumo wekhaya

**LATEST ACCOUNT TOTAL DUE** R **259.10**

METER DETAILS/PROPERTY VALUES	OLD READINGS	NEW READINGS	UNITS USED
ELECTRICITY 315869/001	37422.000KWH(Actual)	37991.000KWH(Actual)	569.000KWH
RATES Land Value R 103000.00	Building Value R 182000.00	Total R 285000.00	
ANNUAL PROPERTY RATES / ERF 71970			
Description	Value	Tariff	Rates Assessed
Site	103000.00	0.0124200	1279.26
Building	182000.00	0.0124200	2260.44
Valuation Rebate	50000.00- x 1	0.0124200	621.00-
Rates Assessed			2918.70

### usebenzisa umbane omninzi – umlinganiselo wekhaya 1

- ama-450 kWh/ngenyanga uhlawulela inkonzo yama-R38,40/ngenyanga.
- i-R0,2919/kWh yeyombane osetyenzisiweyo

## Iphepha-ntlawulo lemitha esezihlawulelwe lesiXeko saseKapa

Ukuze ufumane umbane wakho wasimahla ongama-50 kWh, kufuneka uye kwindawo ethengisela umbane, uwufune khona. Akunyanzelekanga ukuba uthenge umbane ukuze ufumane lo wasimahla uwabelweyo. Kodwa ke, lo mbane wabiwe ngokwendlela 'kayisebenzise okanye uphulukana nayo'.

Umdlilili wekhaya elinengeniso ephakathi eKapa usebenzisa malunga nama-774 kWh/ngenyanga. Umdlilili wekhaya elinengeniso esezantsi usebenzisa ama-369 kWh/ngenyanga.

Yinyaniso kakade ukuba ubungakanani bombane osetyenziswa likhaya lakho buxhomekeke kakhulu kwিনি labantu abahlala kweli khaya, ingaba unayo na igiza yombane okanye hayi, kwakunye nenani lezinto zombane ozisebenzisayo ekhaya.

## Ukuthenga umbane

Ukuba unebhokisi yombane ohlawulelwa ngenx' engaphambili endlwini yakho, umbane ungawuthenga nakweyiphi na ivenkile, isikroxo nditsho nakweyiphi na irenke apha esiXekweni. Xa usiya kuthenga umbane, phatha ikhadi lakho lombane okanye amaphepha-ntengo akho adlulileyo ombane anenombolo yebhokisi yombane yakho. Ukuba ungumthengi-ngqo ku-ESKOM, uyakusebenzisa kwale nkqubo, kodwa umahluko nje ngowokuba kufuneka uthenge kuphela kwiindawo zakwa-Eskom nazo ezifumanekayo ezivenkileni, ezikroxweni nasezirenkini kwiindawo u-Eskom asebenza kuzo. Ukuba ufuna uluhlu olupheleleyo lweendawo ezithengisa umbane, tyelela u-[www.capetown.gov.za](http://www.capetown.gov.za) ze ucofe inkomba ethi, 'Electricity'.

Umbane ungathengwa kwi-intanethi kusetyenziswe amakhadi ebhanki esikwelitini okanye ngeselula. Ukuze ezi ndlela zimbini zisebenze, kufuneka ubhalise kwiwebhu efanelekileyo:

**Ukuba uphansti kwePeninsula, tyelela u-: [www.energy.co.za](http://www.energy.co.za)**

**Ukuba uphantsi kweTygerberg, tyelela u-: [www.ipay.co.za](http://www.ipay.co.za)**

**Ukuba uphantsi kweHelderberg/ Oostenberg tyelela u-: [www.ibuy.co.za](http://www.ibuy.co.za)**

Loo makhaya ahlawula umbane ngokwenkqubo yesikwelitini, aya kufumana i-akhawunti eposini kwinyanga nganye. Le akhawunti nayo ingahlawulwa nge-intanethi, eposini kwakunye neevenkile ezikhethiweyo.

## Amafutha alulwelo

**Ipetroli nedizili** zithengiswa ziinkampani ze-oli ezigaraji. IsiXeko saseKapa sinyanzelisa umthetho ongqongqo wokukhethelwa kwegaraji umhlaba kwaneemfuneko zokhuseleko xa kuza kwakhiwa igaraji. Amaxabiso epetroli nawedizili alawulwa de kuye kuma kwixabiso elinikwa umthengi ngunovenkile, apho athi urhulumente anike abasemagunyeni kwisithili ngasinye elona xabiso liphezulu livumelekileyo lokuthengisa.



Ifoto: Mark Lewis

**Iparafini** yona ayilawulwa ngqongqo njengepetroli nedizili ngokuphathelele ekusasazweni kwayo, kwaye yona ikhokelwa kakhulu yinkqubo yentengiso yayo. Iparafini isasazwa ukusuka kwiindawo ezicokisayo iye kwiidepho zeenkampani ze-oyile ezithenga ngokwezambuku, ihanjiswa ngendleka kakhulu. Emva koko ke ithi isasazwe kwiivenkilana ezincinci kuso sonke isiXeko esi. Urhulumente ilawula ixabiso lehoseyile kuphela leparafini ze emva koko acebise ngexabiso elinokusetyenziswa ngoonovenkile, eliquka ama-33% anokongezwa ngaphezulu kwexabiso lehoseyile. Amaxabiso angehluka kakhulu. Ngonyaka ka-2003 urhulumente uye wayisusa iVAT kwiparafini, nto leyo eye yanciphisa ixabiso leparafini nge-14%. Kodwa ke kukho izikrokro zokuba esi sibonelelo asifikeleli kubathengi.

**Irhasi/ igesi(LPG)** ihanjiswa ukusuka kwindawo yokucokisa eMilnerton isiwe kubasasazi abakhulu ze ke emva koko iye kubasasazi abaphakathi. Isixokelelwano sokusasazwa kweLPG sikude le ngokuphuhla xa sithlekiswa neseeparafini, mhlawumbi kuba kufuneka ubugoci-goci obuthile bokhuseleko phambi kokuba kumiswe umzi werhasi. Kananjalo uthutho lwamatanki eLPG luyabasokolisa abathengi. Okwangoku akukho lulawulo lwexabiso lweLPG.

**Ijeli ye-ethanol** yijeli eluhlaza engamafutha okulayita neyenziwe kwizityalo ezinjengeswekile nombona. Ingasetyenziswa ekuphekeni endaweni yeparafini. Nanjengoko ingenakuchitheka, ubungozi bayo abufani

nobeparafini. Kananjalo ayingcolisi kakhulu. Nakubeni nje la mafutha engekabikho eKapa, urhulumente uyawaxhasa kwaye kufanele ukuba ibe nokufumaneka kungekudala.

## Amalahle neenkuni

**Amalahle** akanamthetho ungqingqwa athengiswa ngawo yaye athengiswa ngosomashishini abazimeleyo. Ngenxa yokuba kude kwemigodi, umbane wamalahle uxabiswa kakhulu yaye usetyenziswa kancinci eKapa. **Iinkuni** kwamanye amakhaya zisetyenziselwa ukupheka nokotha okanye zisetyenziselwe imisetyenzana ethile njengokoja inyama nokupheka utywala. Ezinye iinkuni zigawulwa nje kumahlathana emithi engingqi.

## IKapa liphonononga uMthetho kaMasipala wesiFudumezi-manzi seSola

Isifudumezi-manzi sesola sisebenzisa ubushushu belanga ukufudumeza amanzi, nto leyo ethi inciphise ngokungathethekiyo imfuneko yombane (jonga Amanyathelo Asebenzisekayo apha ngezantsi). IsiXeko saseKapa silandelisa isiCwangciso-qhinga se-Eneji neNguquko yeMozulu (2005) ngoMthetho kaMasipala sesiFudumezi-manzi seSola (SWH). Ukuba lo mthetho upasisiwe, isiXeko siya kuba sisixeko sokuqala eMzantsi Afrika, sibe sesinye sezixeko ezimbalwa eziphambili ehlabathini ukuqondisa ulawulo lwe-eneji yommandla ngomThetho kaMasipala wesiFudumezi-manzi seSola.

I-drafti yomThetho kaMasipala wesiXeko saseKapa ufuna ukuba zonke izakhiwo ezitsha apha esiXekweni, kwakunye nazo zonke izakhiwo ezixonyezelelwa kwizakhiwo esele zikhona, ezizakufuna amanzi ashushu, zisebenzise izixokelelwano zezifudumezi-manzi zesola. Ukanti umthetho lo uyazixolela ezo zindlu zingasayi kuzilungela izixokelelwano ezilolo hlobo – ngenxa yezizathu zobume okanye iimbali zesakhiwo eso. Umthetho kamasipala lo awenzelwa ukuba mawufake nabani na ebumzimeni, kwaye ukuba ixabiso lesifudumezi-manzi sesola lingaphezulu kwe-5% yexabiso lokwakhiwa kwendlu le xa lilonke, isakhiwo eso kufanelekile ukuba sixoleleke.

Ukuwiswa komthetho kamasipala linyathelo lokuqala. Ukwenza ukuba umthetho kamasipala uphumelele, ngokwezinto ojolisiwe kuzo, ngowona mceli-mngeni lowo. Eyona nto iphambili ifunekayo kule nto kukuqinisekisa ukuba isiseko esisebenza ngokukuko sikhona kwaye siya kuqinisekisa ababandakanyekayo ukuba izifudumezi-manzi zesola zizakusebenza ngokobuxhakaxhaka bazo, ifuthe nokongiwa okulindelekileyo kwe-eneji ngophuhliso nokusingqongileyo kuya kuphunyezwa ngohlobo ekubekwe ngalo kumthetho kaMasipala.

## Uthutho kwisiXeko sethu

EKapa, nanjengazo zonke izixeko zoMzantsi Afrika, abantu bahlala ngokuthe saa kwaye nemithetho yobandlululo yenza ukuba abantu bahlale kude kuneendawo abasebenza kuzo, nto leyo yenza ukuba abantu bahambe imigama emide ngezinto ezikhwelwayo mihla le. Izithuthi zikawonke-wonke lolona hlobo lothutho lusetyenziswa kakhulu eKapa. Phakathi konyaka ka-1990 noka-2000 ubunini-zithuthi buye banda ngama-45% eKapa. Ngaphaya kwesiqingatha se-eneji esetyenziswayo eKapa, isetyenziswa kuthutho lwabantu. Uthutho lelona candelo livelisa i-CO<sup>2</sup> eninzi kakhulu ebangela ukuguquka kwemozulu.

Kananjalo ukutsha kwepetroli nedizili kunegalelo elingathethekiyo lokukhutshwa kwenitrogeni nesalfa esixekweni. Amasuntswana enitrik okside enza inkungu emdaka ebonakala gca phezu kweKapa kwiintsuku ekungekho moya ngazo. Urhulumente kazwelonke uyila ukucoca amafutha ethu ezithuthi esebenzisa isicwangciso-qhinga sokukhutshwa komsizi zithuthi seSebe lemiCimbi yokusiNgqongileyo noKhenketho. Ilothe yashenxiswa ngokwezigaba ngonyaka ka-2006. Iziguquli ezibumbanisa iziqalelo zemichiza ziza kufakelwa kuzo zonke izithuthi ezitsha (ezisuka phesheya kwanezo zenziwa kweli) ngonyaka ka-2008. Kodwa ke, izithuthi ezidala zisesezindleleni zethu. Nakubeni



Ifoto: Mark Lewis

nje kusenziwa izinto ukuphucula amafutha ethu ezithuthi, iityhefu eziyingozi zisekho kula mafutha kwaye zikhathazisa ngempilo abo bahlala kufutshane neendlela ezixakekileyo. Ukucuthwa kwamafutha asetyenziswayo iseyeyona nto ibalulekileyo emakujoliswe kuyo.

IGunya lezoThutho kwisiXeko esiliKomkhulu lasungulwa ngonyaka ka-1998/9 laza ke iqela lemisebenzi yezothutho lanikelwa kwisiXeko ukuba siyilawule, kodwa ke ilungelo lothutho ngololiwe lisengumsebenzi worhulumente kazwelonke. Iphondo kwakunye nesiXeko saseKapa bakwinqubo yokwakha ngokutsha ukusebenza kothutho lukawonkewonke. Nanjengoko ulawulo lweenkonzo zothutho ngololiwe lungekho phantsi kwalamagunya olawulo, icala abajonge kulo zizithuthi ezihamba ngendlela. Iqela leeprojekthi zeebhayisikili kwakunye namalungiselelo agxile kubahambi ngeenyawo ayaxhaswa sisixeko. Kananjalo isiXeko sinamanyathelo esiwathabathayo ukulawula izimbo zophuhliso nokukhula kweedolophu ukwenzela ukucutha umgama ophakathi kweendawo zokuhlala neendawo zengqesho.

NguMetrorail onikeza iinkonzo zabahambi ngololiwe eKapa. UGolden Arrow Bus Services nguye yedwa ojongene nenkonzo yokuhambisa abantu ngeebhasi ezihamba ngamaxesha athile eKapa. Iiteksi zona zizisebenzela nganye okanye ibe lishishinana elincinci kwaye kufuneka ukuba zisebenze ngokwamaphepha-mvume athi akhutshwe liBhunga leNgingqi lezoThutho ngeNdlela (maphepha lawo azakwenziwa amaphepha-mvume aqinisekisiweyo ngokomthetho njengenxalenye yenkqubo karhulumente yokwakha inkqubo yeeteksi ngokutsha). Iiteksi zisebenzisa iirenke ezimalunga nama-80 ezisesikweni nezinye iindawo ezimalunga ne-100.

Kukho iinkonzo ezincedisayo kwizikhululo zikaloliwe, iinkonzo ezithatha abantu zibasondeze kwiindlela ezitenxileyo ezindleleni ezinde nezimxinwa apho abantu bathathwa bothulwe kwizitalato ezixakekileyo. Inkqubo karhulumente yokwakhiwa ngokutsha indlela ezisebenza ngayo iiteksi ijoliswe ekuphungeni ukuxinaniswa kwabantu kwanokuphungula inani lezithuthi ezindleleni.



## AMANDLA KWIKHAYA LAKHO

*Ifoto: Mark Lewis*

Ingxelo ngesiMo saMandla eKapa ibonisa ukuba amakhaya asebenzisa i-15% yawo onke amandla asetyenziswa eKapa ne-38% yawo wonke umbane osetyenziswayo. Izibaso ezilulwelo kwezothutho zisisiqingatha sawo onke amandla asetyenziswayo eKapa.

Amandla atya imali eninzi kumakhaya amaninzi asokolayo aseKapa – kumaxa amaninzi ade afikelele naphakathi kwe-15% nama-25% yomvuzo wekhaya. Phantse onke amakhaya eKapa anombaone ngoku. Abantu abaninzi basasebenzisa iparafini ekuphekeni nasekuzigcineni befudume nanjengoko bengenakho ukuthenga izixhobo zombane ezitsha okanye ukuhlawula umbane. Iparafini ingathengwa yona ibe ncinci okanye ibolekwe kubamelwane, okanye ithenge ngetyala kwizikroxo xasekuhlaleni xa imali isasokoleka. Nangona iinkuni zokubasa zinokuthezwazwa simahla ematyholweni azimeleyo, oku kungatya ixesha kwaye kunganobungozi. Kukho nengozi yokwenzakalisa okusingqongileyo ngenxa yokugawula okugqithisileyo. Imililo yamatyotyombe, umoya ongekho mgangathweni kumakhaya asokolayo, ixesha elichithwayo kuthezwazwa iinkuni zokubasa kunye nobungozi bokusela iparafini zezinye zeengxaki abantu baseKapa abasokolayo abajongene nazo.

Amakhaya amkela imivuzo ekumyinge ophakathi nophezulu asebenzisa amandla ngokuphindwe kabini kunamakhaya amkela imivuzo ephantsi eKapa kwaye ngenxa yokusebenzisa umbane kakhulu (izibaso ezikhupha izilahle okanye ikharboni) bakhupha izilahle okanye ikharboni ezingangokuphindwe kathathu. Njengoko amaxabiso ombane eMzantsi Afrika esezantsi kakhulu, iindleko zombane kumakhaya amkela imivuzo ephakathi nephezulu zimalunga ne-3% ukuya kwi-5% yomvuzo wawo, okuthetha ukuba akukho mbuyekezo ingako ngokwezimali ekulondolozeni imali ngokusebenzisa umbane ngobulumko. Kodwa amaxabiso ombane aza kunyuka.

Ukwazi ubungakanani bamandla asetyenziswa likhaya lakho – nokuba asetyenziselwa ntoni – kungakunceda ukuba uzazi izinto omawuzikhokelise uziphucule osebenzisa kuzo umbane kwikhaya lakho. Oku kuza kunceda ukuba wonge imali, uphucule impilo nokhuseleko kwikhaya lakho nokusingqongileyo kwakhona kuhambelane nemimiselo yamandla yesiXeko sethu.

Amakhaya angonga ama-20% ukuya kuma-30% ombane awusebenzisayo – kumaxa amaninzi engachithanga mali okanye echithe encinci. Amaziko ombane asebenzisa iilitha ezi-2 zamanzi ngeyunithi nganye yombane (1 kWh) eveliswayo. Ukonga umbane konga amanzi!



*Ukwanezisa iimfuno zamandla kusebenzisa i-15% ukuya kuma-25% yemivuzo yamakhaya asokolayo, kodwa nje malunga ne-2% ukuya kwi-3% yemivuzo yamakhaya atyebileyo.*

## Ukufumana apho unokonga khona amandla nemali ekhayeni lakho.

### Amakhaya asebenzisa umbane ikakhulu



Lo msebenzi uza kunceda ukuba wazi into owusebenzisa kuwo umbane ekhayeni lakho nalapho unokonga khona. Uluhlu lwezixhobo zasekhaya ezisebenzisa umbane lunikiwe apha ngezantsi ukukunceda.

#### **Inyathelo 1:** Ukuqokelela ulwazi

Kuikholam 1 yeTheyibhule, dwelisa zonke izixhobo zombane onazo ekhaya

Kukholam 2 bhala amandla ombane (W) esixhobo sombane ngasinye. Amandla ombane esixhobo avamise ukubhalwa kwisixhobo eso. Kodwa kumaxa amaninzi, oku kubonisa awona mandla aphezulu asetyenziswa seso sixhobo, anokuba phezulu kakhulu kunamandla aqhelekileyo asetyenziswa sisixhobo eso. Le theyibhuli ingezantsi, 'UMbane oQhelekileyo oSetyenziswa sisiXhobo soMbane saseKhaya' inika ulwazi oluqikelelwayo kwizixhobo eziqhelekileyo kwaye ingalulutho.

Kukholam 3 khuphela (ngeeyure) ukuba isixhobo eso sisetyenziswa ixesha elingakanani ngemini (uwukhumbule umahluko ngendlela yokusebenzisa phakathi kweentsuku zaphakathi evekini nempela-veki kunye nobusika nehlobo uzibalele umyinge ngokwakho).

**Qaphela: Ezinye izixhobo zimana zizicima, umzekelo ifriji netanki lamanzi ashushu lendlu. Kwakhona la theyibhuli 'UMbane oQhelekileyo oSetyenziswa sisiXhobo soMbane saseKhaya' ingasetyenziswa ukuqikelela umbane osetyenziswayo.**

Ukuba unesixhobo sombane esingaphezulu kwesinye, esifana nebhalbhu zokukhanyisa, bhala oku kuKholam 4

#### **Inyathelo 2:** Ukubala

Ukwazi umbane owusebenzisa mihla le usebenzisa indlela yokubala elula:

$(i\text{-watt} \times i\text{iyure esizisebenzisayo})/1\ 000 = \text{umbane osetyenziswayo ngemini}$

Qaphela: i-1 kilowatt = 1 000 watt

Apha uphinda-phinda uKholam 2 ngoKholam 3 uphinde ngoKholam 4 (xa kunezixhobo ezingaphaya kwesinye). Eli nani lokugqibela lahlula-hlulwa nge-1 000 ukuze kutshintshwe iiyure ze-watt zibe ziyure ze-kilowatt. Bhala isiphumo sisonke kuKholam 5.

Ukuze wazi umbane owusebenzisayo ngenyanga phinda-phinda umbane wosuku uwonke ngeentsuku ezingama-30 ubhale isiphumo kuKholam 6

Dibanisa i-kWh ezisetyenziswe zizixhobo zizonke ufumane isiphumo sombane owusebenzisayo uwonke.

**Inyathelo 3:** Khangela iindawo ezizakuthathelwa amanyathelo eziphambili nalapho kunokongiwa khona

Phonononga iziphumo zakho. Zeziphi izixhobo ezisebenzisa umbane kakhulu? Ukukwazi oku nokuthatha amanyathelo alula asebenzisayo okonga imali (acaciswe kweli candelo lilandelayo) kuyakunceda ukuba unciphise indlela osebenzisa ngayo umbane.

Inkoliso yamakhaya amkela imivuzo ephakathi asebenzisa malunga ne-774 kWh ngenyanga (malunga nama-R250 ngenyanga) yombane. Uninzi lwawo – ukuya kutsho kuma-60% - lusetyenziselwa ukufudumeza amanzi ngetanki lamanzi ashushu lasendlini. Ukukhanyisa kuqhele ukuba kwindawo yesibini ngokusebenzisa umbane. Izifudumezi zamanzi zelanga nokusebenzisa ibhalbhu zokukhanyisa ezibengezelayo zinika amathuba okonga umbane wasekhaya – qhubeka ufunde ukuze ufumane okuthe vetshe!

IPhepha lokuHlola lweziXhobo zoMbane zaseKhaya					
1	2	3	4	5	6
Isixhobo	Ukusebenzisa umbane (i-watt)	iiyure ngosuku esisebenza	ngazo Inani lezixhobo	Umyinge we-kWh ngosuku (i-watt x iiyure/1000)	umyinge we-kWh ngenyanga
Umz. ibhalbhu yokukhanyisa - egqengezelayo	60w	4	7	$60 \times 4 \times 7 = 1680 / 1000 = 1,68$	$1,68 \times 30 = 50,4$
Umbane osetyenziswayo uwonke					

## UMbane oQhelekileyo oSetyenziswa sisiXhobo soMbane saseKhaya

Isixhobo	Ukusebenzisa umbane (-watt)		Umyinge weeyure ngosuku ezisetyenziswayo		
Ukukhanyisa			Ukubandisa		
Ibhalbhu egqengezelayo (40W)	40	5	Ifriza enesiciko	105	0.4
Ibhalbhu egqengezelayo (60W)	60	5	Isikhenkisi esibandisa kakhulu	158	5
Ibhalbhu egqengezelayo	100	5	Isikhenkisi esingabandisi kakhulu	250	0.2
I-CFL (12W)	12	5	Ukugcina ikhaya		
I-CFL (18W)	18	5	Umatshini wokuhlamba izitya	2500	0.9
I-CFL (20W)	20	5	sixhobo sokucoca uthuli	1000	0.5
Ukhuseleko (120W)	120	0.3	Ukuhlamba impahla		
Ukupheka			I-ayini (yomphunga)	1235	0.8
Iayini	980	0.4	Umatshini wokuhlamba impahla	3000	0.75 ngomthwalo
Umatshini wokwenza ikofu	670	0.5	Umatshini wokomisa impahla	3300	0.5 ngomthwalo
Isitovu sombane	3000	2			
Ipani yokuqhotsa	1250	0.4	Umculo, ukuzonwabisa, izixhobo ze-ofisi yasekhaya nezinye		
Istovu esinezithebe ezifudunyezwa ngombane esincinci	1275	0.2	Isixhobo sokulumkisa xa kuqhekezwa	10	24
Iketile	1900	0.3	Isixhotyana zokugcwalisa iselula ngombane	9	2
I-Microwave	1230	0.8	Umatshini wokudlala amacwecwe (i-CD)	9	0.4
Isixhobo sokurhawula isonka	1010	0.3	Ikhompyutha	134	1.5
Isixhobo sokwenza iqe-bengwana	1200	0.3	ifowuni engenantambo	2	15
Isixhobo sokwenza ukutya	166	0.2	Umatshini wokufeksa	45	13.6
Igiza			Isixhobo sokomisa iinwele	647	0.1
Igiza (yombane)	2600	4.4	Unomathotholo	12	3
Igiza (ehamba ngamandla elanga)	2600	1.7	Idikhowuda ye-M-Net	28	12.1
			I-Modem	8	24

## Ukufudumeza

Isixhobo	Ukusebenzisa umbane (-watt)	Umyinge weeyure ngosuku ezisetyenziswayo
Isibandisi	1000	2.4
Ingubo yombane	133	5.5
Isifudumezi se-oli (esikhulu)	1850	1.8
Isifudumezi se-oli (esincinci)	1240	0.3
Isifudumezi esinephiko	2000	1.9
Isifudumezi esinemibhojana	1500	2.2
Isifudumezi esinentsimbi e-1	779	1
Isifudumezi esineentsimbi ezi-2	1320	1.4
Isifudumezi esineentsimbi ezi-3	2000	2.2
Isichicileli (esikhawuleza kakhulu)	500	0.1
Umatshini wokuthunga	100	0.4
Umatshini ophendula ifowuni	5	15.6
I-TV 37 cm emibala-bala	50	6
I-TV 70 cm emibala-bala	100	6
isishicileli sevidiyo	27	4.7

## Amakhaya asebenzisa iintlobo ezahlukeneyo zezibaso

Lo msebenzi uza kuqwalasela imali esetyenziswa kwizibaso, hayi amandla asetyenziswayo ewonke. Ukuqonda ukuba yintoni esebenzisa amandla (nemali) kakhulu kuya kukunceda ukuba wazi apho unokonga khona imali.

### Inyathelo 1: Ukuqokelela ulwazi

KuKholam 1 weTheyibhuli, dwelisa zonke izibaso ozisebenzisayo, ezifana neparafini, igesi, amalahle, umbane neenkuni.

KuKholam 2: bhala zonke izinto ozisebenzisela sona isibaso ngasinye, ezifana nokupheka, ukukhanyisa, umculo, ukuzifudumeza, ifriji noku-ayina.

KuKholam 3 bhala ukuba usisebenzisa kangakanani isibaso ngasinye ngeveki.

KuKholam 4 bhala phantsi ixabiso lesi sibaso ngeyunithi nganye, umzekelo ilitha, ikhilogramu yesibaso.

### Inyathelo 2: Ukubala

Ukwazi ixabiso lesibaso ngasinye ngeveki, phinda-phinda umyinge osetyenzisiweyo (Kholam 3) ngexabiso leyunithi (Kholam 4). Bhala okufumeneyo kuKholam 5. Ukuba ufuna ukwazi inani lenyanga, phinda-phinda oku kwakhona ngeentsuku ezingama-30.

### Inyathelo 3: Khangela iindawo eziza kuthathelwa amanyathelo kuqala nalapho kunokongiwa khona

Cinga ngento ochitha kuyo imali eninzi kwisibaso ngeveki. Phonononga esi sahluko ukhangele amacebiso aluncedo ngeendlela ezingcono zokusebenzisa amandla onokuzisebenzisa. Jonga nakwicandelo loKhuseleko ekupheleni kwesi sahluko ujonge iindlela onokuphucula ngazo ukhuseleko ekhaya.

1 Uhlobo lwesibaso	2 Inkonzo	3 Ubungakanani ngeveki	4 Ixabiso ngeyunithi (iilitha, ihkilo, inani)	5 Ixabiso lesibaso ngeveki (ubungakanani x ixabiso)
Umzekelo: Iparafini	Ukupheka	1 ilitha	R3,55	R10,60
Ixabiso lilonke				

### Qikelela ikhabhoni/isilahle esikhutshwa lusapho lwakho

Izibaso ezahlukeneyo zikhupha ikharboni dayokhsayidi eyahlukeneyo ngokulingana. Umbane eMzantsi Afrika ukhupha ikharbon dayokhsayidi eninzi njengoko ukhutshwa ngokutshiswa kwamalahle angekho mgangathweni. Ukukwazi ukuqikela ngokukhawuleza amandla owasebenzisiyo nekharboni oyikhuphayo landela la manyathelo angezantsi. Qaphela: Oku akubandakanya amafutha ezithuthi – aza kubalwa wona kwicandelo lezithuthi ngezantsi.

**Inyathelo 1:** Ukusebenzisa uphando olwenze apha ngasentla, okanye ingxelo yombane wakho okanye netyala lezibaso, faka izibaso ozisebenzisayo ngenyanga nganye kuKholam 1.

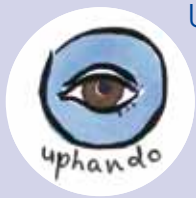
**Inyathelo 2:** Phinda-phinda oku ngenani olunikiweyo kuKholam 2 (umz. embaneni ngu-1,08). Oku kuza kunika ikhilogramu yekharbon dayokhsayidi ngenyanga. Bhala oku kuKholam 3

**Inyathelo 3:** Xa ufuna ikharbon dayokhsayidi oyikhupha ngonyaka, phinda-phinda ngeenyanga ezili-12 (Kholam 4) neziphumo zezibaso zizonke.

1	2	3	4
Ukuba umbane _____ kWh	x 1,08 kg CO <sub>2</sub> nge-kWh	_____kg CO <sub>2</sub> ngenyanga	_____kg CO <sub>2</sub> ngonyaka
Ukuba I-LP gesi _____ kg	x 3,09 kg CO <sub>2</sub> nge-kg	_____kg CO <sub>2</sub> ngenyanga	_____kg CO <sub>2</sub> ngonyaka
Ukuba iparafini _____ iilitha	x 2,58 kg CO <sub>2</sub> ngelitha	_____kg CO <sub>2</sub> ngenyanga	_____kg CO <sub>2</sub> ngonyaka
Izinto eziyelelene namandla ezikhutshwa likhaya kwikhaya lakho zizonke ngonyaka		_____kg CO <sub>2</sub> ngenyanga	_____kg CO <sub>2</sub> ngonyaka

Thelekisa ikharboni eniyikhuphayo ekhayeni lakho nekharbon dayokhsayidi (CO<sub>2</sub>) ekhutshwa ngamakhaya aseKapa.

Uhlobo lwekhaya	i-kg CO <sub>2</sub> ngenyanga
Ikhaya eliqhelekileyo elingenambane elinomvuzo ophantsi eKapa	146
Ikhaya eliqhelekileyo elinombane elinomvuzo ophantsi eKapa	193
Ikhaya eliqhelekileyo elinomvuzo ophakathii eKapa	737
*La manani awabandakanyi ezikhutshwa kukusebenzisa kwethu izithuthi.	



## Ukulungisa ikhaya lakho

UMatthew Walton uyalithanda ikhaya lakhe eliseDiep River – indlu ethe gabalala eyakhiwe ngohlobo lwasefama lwamandulo ethe tshwa kwidolophana eshinyeneyo. UMatthew unomdla kakhulu kwizinto zokusingqongileyo, ekupheleni kuka-2003 wagqiba ekubeni alungise indlu yakhe.

Uphando, oluqwalasela indlela asebenzisa ngayo amandla namanzi lwenziwa kwikhaya likaWalton. Olu phando lwaqalasela nendlela efanekileyo la manzi manye nenkonzo yombane anokuhanjiswa ngayo – ngaphandle kokutshintsha ubomi kwikhaya likaWalton. Olu phando lwakhokelela kwizinto ezatshintshayo ezibalulekileyo.

### Amandla

- Ibhambhu zokukhanyisa eziqhelekileyo ezizigqangazelayo ezilithoba (ezinee-watt ezingama-60 nezili-100) zatshintshwa ngeebhambhu ezijiko-jiko ezibengezelayo (ezinee-watt ezisi-9 nezili-11), kubandakanya nezangaphandle.
- Into yokugcina ixesha yafakelwa kwitanki lamanzi ashushu okanye igiza kaWalton. Le wotshi yalungiselelwa ukuba isebenze kusasa, ukuqinisekisa ukuba usapho luvuka lunawo amanzi ashushu, icime emini iphinde isebenze ngorhatya xa usapho luzakuhlambela ukulala.
- Igiza yesibini endala yayiphezu kwesilingi. Le giza yayingasasetyenziswa kodwa yayisavutha isebenzisa umbane kuba amanzi ayaphola aphinde azifudumeze imini nobusuku. Le giza yacinywa.
- Usapho lakwaWalton lanikwa ibhokisi yokufudumeza ukunciphisa iindleko zokupheka.

### Amanzi

- Kwafakela intloko yeshawari ekhupha amanzi kancinci. Oku kunciphisa ukuphuma kwamanzi ngomlomo, abe amanzi esatsiba xa aphumayo. Kumnandi ukusebenzisa le shawari. Kwafakelwa isingxobo seplastiki ekuthiwa yi-hippo kwindlu yangasese yeendwendwe nendlela egungxula kaninzi kwizindlu zangasese ezintathu zosapho.
- Isixhobo sokulawula amanzi kwiimpompo safakelwa kwiimpompo zamanzi ekhitshini.

Phambi kolu tshintsho ityala lombane leli khaya lalingumyinge wama-3 122 kWh ngenyanga. Oku kwakusidla usapho i-R1 217 ngenyanga nganye. Ukwenza lo msebenzi kuxabise i-R738. Inyanga emva kolu tshintsho ityala

lombane losapho lakwaWalton lehla laya kutsho kwi-1 794 – kongiwa i-1 327 ngenyanga. Ityala labo lenyanga ngoku ngama-R700, bongela usapho ama-R500 ngenyanga. Ngale mali isecaleni usapho lalihlawula ityala lalo msebenzi ngeeveki nje ezintandathu.







Amanzi asetyenziswa lusapho lakwaWalton phambi kwezi zinto zatshintshwayo ngenyanga ebabamalunga nama-40,5 kl atye malunga nama-R400 ngenyanga. Ukwenza utshintsho abakwaWalton bahlawule i-R1 385, ubuninzi bale mali buye kufakwa kwezixhobo ezithathu ezigungxula kaninzi. Inyanga emva kwalo msebenzi, amanzi asetyenziswa ngabakwaWalton ehla aya kuma-26,9 kl – kongeka amanzi ali-13,5 kl iinyanga zonke. Ityala lenyanga lamanzi ngoku limalunga nama-R270 – kusinda i-R130 ngenyanga eya kusapho. Ngale mali yongiwayo usapho lwahlawula iindleko zokutshintsha zonke zingaphelanga iinyanga ezili-10.

### Ukuhamba-hamba: Izithuthi nekhaya lakho

Izinto esihamba ngazo ukuya esikolweni, emsebenzini okanye naphina zikuchaphazela kakhulu okusingqongileyo ngaphandle kokuba sihamba ngeenyawo okanye ngebhayisekile. Ukuba usebenzisa ngemoto yakho, nanku umsebenzi olula oza kukwenza ukuba uqonde indlela ukuhamba ngemoto kwakho okukuchaphazela ngako okusingqongileyo ngokukhupha ikharbhoni:

- Inyathelo 1:** Bala umgama ongumyinge (ngeekhilomitha) owuhambayo ngemoto veki ngaye, ukubhale phantsi oku.  
**Inyathelo 2:** Phinda-phinda eli nani ngeeveki ezingama-52 ukuze ufumane umyinge weekhilomitha ozihambayo ngo nyaka (ngamnye).  
**Inyathelo 3:** Phinda-phinda iikhilomitha zakho zonyaka ngo-0,3 kg ze-CO<sub>2</sub> = \_\_\_\_\_ kg CO<sub>2</sub> ekhutshwa ngonyaka

### Umyinge wamafutha osetyenzisiweyo ukuhambisa umntu omnye ngezithuthi ezahlukileyo

	Umntu om-1ohamba ngemoto enkulwana	lilitha eziyi-12 kwi-100km		Umntu ohamba ngemoto encinci	lilitha eziyi-8 kwi-100km
	Abantu aba-4 abahamba ngemoto enkulwana	lilitha ezi-4 kwi-100km		Abantu aba-4 abahamba ngemoto encinci	lilitha ezi-3 kwi-100km
	Abantu aba-40 abahamba ngebhasi yedizili	lilitha ezi-2 kwi-100km		Abantu abayi-300 abahamba ngololiwe wedizili	lilitha ezi-1,8 kwi-100km

Ukuhamba ngenyawo nangebhayisekile kokona konga amafuthe!



# AMANYATHELO ANOKUPHUNYEZWA

Amakhaya ethu asebenzisa amandla. Ngalo lonke ixesha sisebenzisa izixhobo zombane, sikhanyisa izibane, sipheka ukutya, sifudumeza amanzi sisebenzisa amandla ombane. Ama-25% ayo yonke i-CO<sub>2</sub> ekhutshelwa kwi-atmosfera yomhlaba isuka kumandla asetyenziswa emakhaya. Oku kuthetha ukuba amanyathelo esiwathabathayo ukuphucula indlela esisebenzisa ngayo amandla kumakhaya ethu kungenza umahluko ngenene. Ukusebenzisa amandla ombane ngenkathalo kungalondoloza imali. Izibaso zinganobungozi. Ukusebenzisa amandla ngendlela engcono kungalenza ikhaya lakho libe lelikhuselekileyo.

## Ukuthenga izixhobo zombane ezisebenzisa amandla ngokufanelekileyo

Izixhobo ezahlukeneyo zingenza umsebenzi omnye zisebenzisa amandla amaninzi okanye amancinci. Oku kuthetha ukuba ngethuba uthenga isixhobo sombane esitsha unethuba elaneleyo ukwenza umahluko njengoko isixhobo osikhethileyo siza kuchaphazela indlela owasebenzisayo ngayo ngawo **side esi sixhobo siguge**.

Urhulumente uqalisa indlela engummiselo yokuphawula indlela engcathu yokusebenzisa umbane eza kugqitywa ngo-2007. Oku kuza kufuna ukuba zonke izixhobo zombane ezitsha zibe nophawu olucacisa iimfuno nendlela esiwasebenzisa ngayo amandla ukuze wena njengomthengi ukwazi ukuthelekisa amazinga ezixhobo zombane. La mazinga amiselwe ngokweMigangatho yeSizwe yoMzantsi Afrika (iSouth African National Standards okanye I-SANS) uphawu olo lona luyafana nolusetyenziswa kumazwe eMbumba yeYurophu. Izinga elingu-'A' libonakalisa ukuwasebenzisa kakhulu amandla ombane u-'G' ukuwasebenzisa kancinci.

## UKUFUDUMEZA AMANZI

### Eyona ingcono

Igiza zombane eziqhelekileyo zisebenzisa ukuya kutsho kuma-60% ombane wakho wasekhaya. Ukufudumeza amanzi emlilweni okanye ngesitovu kungabangela imililo nokutsha. Kukwayidlela egaxabisi kakhulu emva kwexesha. Nangona kubiza imali eninzi ukufaka izifudumezi-manzi zamandla elanga (i-Solar Water Heat okanye i-SWH) ethubeni azinaziphumo zibi epokothweni nakokusingqongileyo.

### Isifudumezi samanzi selanga (i-SWH)

UMzantsi Afrika unelanga elihlala ligqatsile unyaka wonke. Singabanye abanelanga elihlala livelile iyure ezininzi kwihlabathi. Sekunjalo, angaphantsi kwe-1% amakhaya eMzantsi Afrika anee-SWH. Oku kubangelwa yimali efunekayo yokuzifaka, nokuba abantu abaninzi abanawazi ngazo. Kumazwe afana nakwaSirayeli, malunga nama-60% amakhaya ane-SWH.

Ukufudumeza amanzi ngamandla elanga kuxhomekeka kumandla amaninzi elanga. Nangona esi sifudumezi singafuna ukulalelisa ngombane, mncinci kakhulu umbane osetyenziswayo. Oku kuthetha amanzi ashushu 'asimahla', ukuphunguka kongcoliseko nokuba namanzi ashushu nokuba umbane ucimile! I-SWH yomelele xa sele ifakiwe iyayihlala neminyaka engama-20 nangaphezulu. Ungonga imali ngayo kwaye inexabiso xa uyithengisa indlu.

### Zisebenza njani isizufudumezi-manzi zamandla elanga?

I-SWH bubuchwepheshe bale mihla obuthembekileyo. Ezi zixhobo zinendawo ezibalulekileyo ezimbini:

- isixhotyana esimcaba esimnyama ekuthiwa 'sisixhobo sokuqokelela amandla elanga' amanzi ahamba kuso afudunyezwe lilanga, kunye
- itankana eligqunyiweyo lokugcina apho amanzi ashushu anokusetyenziswa agcinwa khona.

Esi sixhotyana simnyama sokuqokelela sibekwa kwicala lephahla lendlu elijonge ngasemntla kwaye sifudumeza amanzi ngokukhawuleza xa ebekwe kwi-engile ephakathi kuka-17° no-23° ephahleni. Itankana lokugcina lingasephahleni ngaphandle (kwisifudumezi esidibeneyo) okanye ngaphakathi (kwisifudumeze esahlukeneyo) kodwa kufuneka sisoloko siphezu kwesi sixhotyana sokuqokelela.

Ngokuba simnyama, isixhobo sokuqokelela sitsala ubushushu elangeni. Oku kufudumeze amanzi akuso. Amanzi ashushu ababuhlambuluka kunabandayo kwaye ayanyuka abe phezulu etankini ngeli lixa ulwelo olubandayo lunzima kwaye luzika. Amanzi abandayo akwitankana lokugcina ehlela ngezantsi, oku kubangela ukuba ajikeleze kwisixhobo sokuqokelela apho athi afudunyezwe lilanga. Olu jikelelezo lwamanzi kuthiwa kukwenzeka kwethemosifoni.

Xa kungekho kukhanya kwelanga ayinzeke ithemosifoni. Ukwambathisa itanki kakuhle kuqinisekisa ukuba amanzi asetankini ahlala eshushu ixesha elide. Ezinye izifudumezi zisebenzisa umbane ubulalelise xa kungekho kukhanya kwelanga, okanye xa ekhaya kufuneka amanzi ashushu amaninzi.

### Ukugqiba ngokufakela i-SWH

I-SWH ingaxabisa ukuqala kuma-R3 500 (ubuqu bayo) ukuya kutsho kuma-R20 000 kuxhomekeka kumthamo owufunayo. Isifudumezi-manzi ngamandla elanga sekhaya nje eliqhelekileyo elinamalungu amane esinombane wokulalelisa singaxabisa kubuthaba bama-R7 500 ukuya kuma-R12 000.

Ukuba ityala lombane ngenyanga losapho elinamalungu amane ngama-R500, ungonga malunga nama-R200 ngenyanga embaneni ukuba ufakela isifudumezi-manzi samandla elanga. Ngonyaka leyo ifikelela kuma-R2 400. Kwiminyaka emihlanu uyakonga ama-R12 000. Ungonga nangaphezu koku njengoko amaxabiso ombane kule minyaka mihlanu izayo eza kunyuka njengoko kufuneka kwakhiwe izikhululo zombane ezitsha.

Oku kuthetha ukuba kwiminyaka emihlanu uzifakelele esi sifudumezi uya kube uyihlawule wayigqiba i-SWH yama-R12 000. Emva koko uza konga kuphela kwiindleko zasendlwini. Ukuba ufuna ukutshintsha igiza yakho oku kuyinto evakalayo nangakumbi. Ngaphezu kokonga imali ungathintela ama-2 400 kg eCO<sub>2</sub> ukuba angene kwi-atmosfera ngonyaka nje omnye emva kokufaka i-SWH.

Eyona ndlela ibubulumko yokuthenga i-SWA kukuyihlawula yonke ngexesha elinye okanye usebenzisa inzala kwityala lendlu yakho. Ukuba awufikeleli kwi-SWH ube ufuna ukutshintsha igiza, ungafakela itankana lamanzi ashushu elihambelana ne-SWH usifakele mva isixhotyana sokuqokelela amandla elanga. Igiza ehambelana ne-SWH ingcono xa igqunywe kunetankana lamanzi ashushu eliqhelekileyo kwaye lifakelwe nombhobho owongozelelweyo wangaphakathi nangaphandle ukuze kwenzeke ithemosifoni.



### Amandla elanga alula

Ungawafudumeza amanzi akho ngokusebenzisa ibhakethe elimyama elingama-50 litha. Ibhakethe malicoceke lingabanazikhemikhali. Lazi ibhakethe lakho apho lisuka khona. Ungaze ulusisebenzise kwakhona ibhakethe elidala, koko thenga elitsha ukufudumeza amanzi.

### Amacebiso okusebenzisa igiza kakuhle

- Ukuba igiza yakho okanye imibhobho esuka kuyo ishushu xa uyibamba oku kuthetha ukuba ilahlekelwa bubushushu idlala ngamandla.
- Yigqume igiza yakho nemibhobho yamanzi ashushu usebenzisa imibhobho yokugquma igiza okanye ngokuyambathisa ngengubo okanye ngephepha-ndaba.
- Ukoleka iingubo (iingubo ezimfuma-mfuma nezishushu) uze ngephepha le-alumuniyami elomeleleyo wambathise igiza uzibambe ngemitya kusebenza kakuhle kakhulu.
- Phungula iqondo lobushushu kwigiza. Iqondo eliphezulu ngama-50°C ehlotyeni ibe ngu-60° C ebusika. Inkoliso yeegiza zibekwa ku-650C. Ukuphungula iqondo lobushushu legiza ngo-1°C kungonga **i-10% kwindleko zakho zombane**.
- Faka isixhobo sokugcina ixesha sokuyivula igiza ngokwexesha olimiseleyo ngokwenza oko ungafudumezi amanzi xa ungawafuni. **Qaphela:** Esi sigcini-xesha sisebenza kuphela ukuba giza yambathisiwe.
- Iigiza ezimileyo zisebenzisa amandla ombane kancinci kunezo zingqengqisiweyo.

## UKUPHEKA

### Okona kungcono

Isitovu segesi esine-onti yombane okanye isazinge segesi nesitovu sombane zezona zilungileyo unokuzikhetha ukulungiselela ukupheka xa uthathela ingqalelo okusingqongileyo nemali. Kodwa igesi akululanga ukuyifumana. Nangona isitovu separafini kungabizi kakhulu ukusithenga, sisesona sizathu semililo kwaye sifuna ukusetyenziswa ngononophelo olukhulu. Ibhokisi eshushu ilulutho kakhulu njengezinye sezixhobo zokupheka.

## Ukupheka kwasimahla – IBHOKISI ESHUSHU

Ibhokisi eshushu yenziwe ngezinto ezimfuma-mfuma ezimbini ezinepolisterini. Ibhokisi eshushu ixabisa malunga ne-R140, kodwa ungenza into efana nayo ngokwambathisa iimbiza ngengubo okanye ibhegi yokulala. Ukusebenzisa ibhokisi eshushu **kungonga ukuya kutsho kuma-60% kwiindleko zokupheka.**

Ukutya okufana nerayisi, isidudu, isuphu okanye isityu ezibiliselwe esitovini zingafakwa kwibhokisi eshushu enesiciko embizeni. Ezi zinto zimfuma-mfuma okanye ingubo zigcina ubushushu nokutya nako kuza kuqhubeka kuphekeka. Qaphela: Sukuyisebenzisa ibhokisi eshushu xa upheka ngamafutha.

Ukutya kuphekwa ngexesha elibulingana naxa kuphekwa ngohlobo oluqhelekileyo, kodwa ngoku izakha-mzimba nesongo nokuvuthwa ziyagqwesa (ngenxa yokupheka ngomlilo ophantsi).



Ifoto: Courtesy of Just Living Centre



ISalathiso liqela loomama abanentsholongwane i-HIV baseKayamandi ekwimimandla emelene neStellenbosch. Beliqela, baqala ukwenza iibhokisi ezishushu – imveliso abayibona njengesisombululo kwimfuno zabo zamandla nokuphungula iindleko ezingumthwalo zezibaso. Imali engenisiwayo kwabelwana ngayo ngaba mama. Uninzi kweli qela lo kuphela komvuzo abawufumanayo. Ukuxhasa eli phulo, ufumane nolwazi oluthe vetshe okanye u-odole ibhokisi eshushu, qhagamshelana noWendy Walton kwa-(021) 683 8597.



### Amacebiso ngendlela yokupheka engcono

- Jonga irabha ezitywine i-oveni ukuba azityekanga okanye aziphelanga na njengoko oku kubangela ukuba kusebenze umbane kakhulu.
- Thenga esona sixhobo sombane sincinci onokufikelela kuso ukulungiselela ukupheka. Oku kuza konga isibaso.
- Xa uthenga nasiphi na isixhobo sombane, jonga iqondo laso lokusebenzisa amandla. Xa uthenga isitovu separafini okanye sikagesi, cela umthengisi ukuba akubonise “iLeta yoGunyaziso yakwa-SABS” yaye ukuba akuqinisekanga ngeso sixhobo fowunela uSABS kwa-012 428 6375. Isitampu nje esisodwa sakwaSABS asisosiqinisekiso somgangatho nokhuseleko.
- Sebenzisa iketile ukubilisa amanzi. Iketile isebenzisa umbane ongaphantsi ngama-50% kunaxa ubilisa ngembiza esitovini. Bilisa kuphela amanzi afunekayo, kodwa qinisekisa ukuba isixhobo esidala ubushushu asivelanga.
- Zilalise emanzini iimbotti, umgqusho, neelentile ukonga ixesha, imali, nexesha elide lokupheka.
- Gcina isitovu sakho separafini sicocekile njengoko oku kuza kusenza sisebenze kakuhle – iparafini yakho iza kuhlala ixesha elide nomsi ophuma kuso awuzukuba nabungozi kakhulu.
- Xa imbiza yokutya sele ibilile, ungawuhlisa umlilo nanjengoko ukutya oko kuza kuqhubeka kuphekeka. Akunyanzelekanga ukuba imbiza ibile idlwabhazele lonke ixesha upheka.

## UKUKHENKCISA

### Eyona ingcono

Ifriji yombane yeyona ilungileyo. Ukuba akukho mbane ikhaya malikhethe phakathi kweparafini negesi. Iparafini ayibizi kakhulu kodwa ingayichaphazela impilo nokhuseleko. Igesi icocekile kwaye isebenza kakuhle, kodwa iyabiza kuneparafini.



### Amacebiso okukhenkcisa ngokufanelekileyo

- Thenga iifriji nolu hlobo luvulwa ngaphezulu (lubandisa kakhulu) ezingawusebenzisi kakhulu umbane. Funa iifriji ezinesikompresa nephiko lomoya le-BLDC ezisebenza kakuhle ukuze wonge amandla. Thelekisa indlela iintlobo ezahlukeneyo ezizusebenzisa ngayo umbane. Olu lwazi lusoloko luhamba nefriji leyo.
- Qinisekisa ukuba kukho isithuba esikhoyo emva kwefriji ukuze umoya ukwazi ukuhamba lula kumajiko-jiko ekondensa. Kufuneka ahlale engenathuli njengoko oku kwenza ifriji ingasebenzi kakuhle.
- Ifriji egcweleyo isebenzisa amandla amancinci kunengenanto. Gcina iibhotile zamanzi abandayo njengoko ziza kucina ukubanda.
- Qinisekisa ukuba imitywino yerabha kwifriji yakho ikwimeko efanelekileyo ukuze ungaphumi umoya obandayo. Ukuba le rabha yokutywina ityekile kwaye nefriji ayivaleki kakuhle, jonga igama nohlobo lwefriji uye apho yenziwa khona okanye ivenkile ezithengisayo okanye indawo ezikhandayo ufune isitywini esitsha. Xa utshintsha isitywini kuza kufuneka ukhulule umphetho ophakathi komphakathi nomphandle wocango, ususe isitywini esidala ufake esitsha ubuyisele izikhonkwane.

## UKUKHANYISA IKHAYA LAKHO

### Eyona ndlela ilungileyo

Ukukhanyisa ngombane yiyona ndlela ilungileyo ingakumbi ukuba kusetyenziswa ibhalbhu ezijiko-jiko ezibengezelayo. Isibane separafini sitshiphu ukusithenga, kodwa sidla imali ukusisebenzisa kwaye asikhanyisi ngokwaneleyo xa ufunda. Amakhandlela ayingozi njengoko ebangela umlilo kumaxa amaninzi.



umfanekiso ufunyenwe ngobubele kwimlagazini i-Mens' Health

## Ibhalbhu eziJiko-jiko eziBengezelayo (ii-CFL)

Ibhalbhu i-CFL ziguqula ama-80% amandla eziwasebenzisayo itsho ikhanyise, ibe ngama-20% kuphela ababubushushu. Ibhalbhu ezigqengezelayo ziguqula ama-20% ombane eziwufunayo ukhanyise aze ama-80% yona ibe bushushu. Nangona iibhalbhu i-CFL zibiza ngokuphindwe kathathu ukuya kahlanu kunezibhalbhu ziqhelekileyo zigqengezelayo, zihlala kangokuphindwe kathandathu ukuya kalishumi ke ngoko zitshiphu kunezi ziqhelekileyo. Akufuneki zinto zithile zokuzifaka – utshintsha nje le bhalbhu unayo ng-CFL.

Ii-CFL ziyafumaneka kwiivenkile ezinkulu nakwezithengisa izinto zeentsimbi. Amaxabiso ebhalbhu ezi-CFL ayashiyana ngokwendlela emile ngayo kunye nomlinganiso wamandla ombane. Ibhalbhu eqhelekileyo yasekhaya (11w itshintsha i-60%W yale igqengezelayo) ixabisa malunge ne-R12,00.

Ukufakela ibhalbhu ebengezelayo ejiko-jiko enamandla ombane ali-11 endaweni yebhalbhu egqengezelayo enamandla ombane angama-60 kungonga malunga ne-570kWh ngethuba i-CFL ikhona isebenza – wonge malunga ne-570kg yekharboni dayokhsayidi kwiminyaka elishumi yobomi bayo. Ukuba onke amakhaya eKapa angekwenza oku, singaphungula ikharboni dayokhsayidi engena kwi-atmosfera ngeetoni ezingama-313 500 ngeminyaka eli-10. Oku kuthetha ukuba umbane ofunekayo ngexesha usetyenziswa kakhulu ungancipha ngee-40 megawathi (MW) yonke.

### Esinye izinto ekufuneka ziqwalaselwe

- Xa ibhalbhu i-CFL iphelelwe (kwiminyaka emithandathu ukuya kwelishumi) kufuneka uyilahle uyisongele ngeplastiki ukukhusela okusingqongileyo njengoko inemetyhuri.
- Inkoliso ye-CFL azisetyenziswa nezixhobo zokucima nokuvula umbane eziluzizi.
- Musa ukuzisebenzisa iibhalbhu i-CFL kwigumbi lokuhlamba njengoko umphunga unokubonakalisa ubuxhaka-xhaka bombane obungaphakathi.
- Ii-CFL ziwonga kakhulu amandla xa zishiywe zingacinywanga iiyure nokuba zimbini ukuya kwezintathu ngemini. Kumagumbi apho zicinywa ziphinde zikhanyiswe, i-CFL ayiwutyi kangako umbane.
- Zikwathatha malunga nemizuzu emihlanu ukuze zikhanyise ngokwegcweleyo.
- Iibhalbhu i-CFL kufuneka zibe nesithuba esaneleyo kule ndawo zifakwe kuyo ukuze umoya ukwazi ukuhamba.
- Iibhalbhu i-CFL mazingafakwa kwiintloko zebhalbhu ezisebenza ngokubakho kokukhanya - oku kwenza zingahlali kakhulu zombini.
- Funa i-CFL enento yokuva eyakhelwe kuyo.

Ibhalbhu ezisihlahla ze-LED zibonakalisa ubuchwepheshe bale mihla obukwiqondo eliphezulu – zihlala iminyaka eli-15 ukuya kuma-20 kwaye zitya amandla ombane ayi-1,08 kuphela ibhalbhu inye (kongeke i-95% ngebhalbhu nganye xa kuthelakiswa nezi ziqhelekileyo zigqengezelayo). Ukuze lilingane ixesha elihlalwa yibhalbhu nganye kwezisihlahla ze-LED kungafuneka uthenge ibhalbhu ezigqengezelayo ezingama-50. Ii-LED ziyimibala ngemibala zikwazi ukuhambelana nemeko ngelo xesha. Kuneebhalbhu eziqhelekileyo ezineglasi enombala, kwi-LED ngamaza okukhanya la enza umahluko wombala. Nangona eli candelo lezobuchwepheshe likhula ngokukhawuleza, ii-LED zisenako ukuxabisa okuphezulu okwangoku zisasetyenziselwa ukukhanyisa xa usebenza (edesikeni okanye xa uzoba) nokuhombisa ngokukhanya.

## Gcina ikhaya lifudumele ebusika yaye lipholile ehlotyeni

### Okona kungcono

Izifudumezi zegesi zisebenza kakuhle kakhulu kwaye zilifudumeza lonke igumbi ngokukhawuleza kwaye zezona zingcono xa sijonga imali, impilo nokhuseleko. Xa usebenzisa igesi qinisekisa ukuba igumbi linemitunja eyaneleyo yokungena umoya. Oku kufuna ukuba iibhotile zegesi nezixhobo zombane nokuphinda uthe zihlale zikhona. Izifudumezi zegesi zibiza imali eninzi kodwa ziyahlala. Isifudumezi se-oli sombane singcono kunesifudumezi esineentsimbi ezingamlezileyo kodwa kuyabiza ukuzithenga. Amalahle, iinkuni neparafini zifumaneka lula kwaye zingasetyenziselwa ukupheka kunye nokuzifudumeza, kuzenze oku zibe zezona zinokukhethwa kodwa ziyingxaki ngokwempilo nokhuseleko.

### Amacebiso ngamaqondo obushushu



- Musa ukusebenzisa i-oveni okanye isitovu ukufudumeza indlu yakho – isifudumezi (sikagesi) sisebenza kakuhle kwaye sitshiphu.
- Zivalisise iingcango neefestile ukuze kungangeni moya – yenza isivingco somoya ngezinto ezindala. Thunga uyiqinise into engathi ngumbhulo (ibe yi-10 cm ukutyeba – ibebulinganga netoti yesiselo). Yigcwalise ngesanti. Beka le nto yokunqanda umoya ngaphakathi ecangweni emazantsi. Umoya awunakungena.
- Umoya kufuneka uvalelwe kuphela xa kukho iindawo zokungenisa umoya ezaneleyo endlwini.

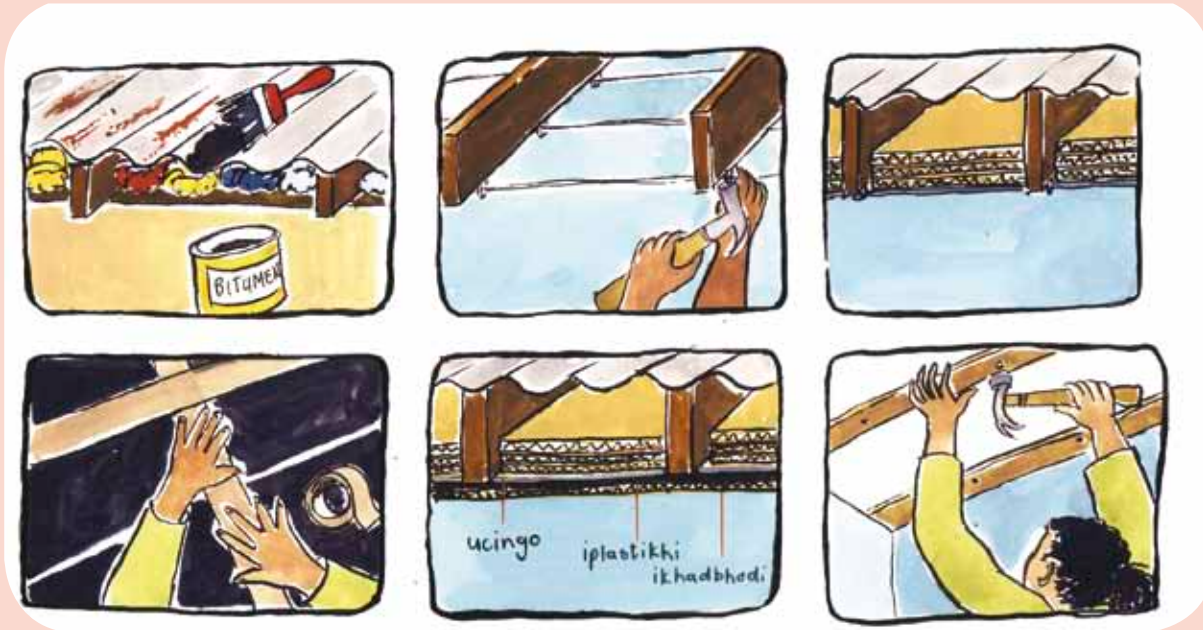
### Ukuyila indlu engatyi mbane

- Phungula ukuya kutsho kuma-70% ombane owasebenzisa ekhaya ewonke ngokulandela imigaqo elula yokwakha ephungula inkcitho embaneni, ekuzifudumezeni nokuzipholisa. Oku kubizwa ngokuba luyilo olungagqamanga lamandla elanga.
- Yijongise ngasemntla indlu yakho ulungiselele ukukhanya nelanga.
- Njengoko icala elisemntla lendlu yakho lifumana ilanga elininzi, itulo lephahla kufuneka libe lide (libe ngama-40cm ukuya kuma-60cm). Lifestile ziza kuba semthunzini ehlotyeni xa ilanga liphezulu, ngelithuba imitha yelanga ingena ngeefestile xa ilanga lisephantsi.
- Izivalo zeefestile, izikhuselo zeseyile okanye imikhusane ziyawakhusela amagumbi ngokuvalela imitha yelanga ngaphandle ehlotyeni.
- Imbobo evuliwe phezulu ephahleni ingenisa ukukhanya kwendalo endlwini ngeemini ezishushu kungasetyenziswa mbane ukukhanyisa. Qinisekisa ukuba iglasi esetyenziswe kule mbobo ithambekele ngasemntla.
- Izinto zendalo (amatye, iipali, ukuthunga ngengca nodongwe), ezifunyanwa kwalapha ekuhlaleni, zifaneleke kakhulu ukugcina indlu ipholile ehlotyeni ifudumele ebusika. Izitena zodaka zineda kakhulu ekwambathiseni.
- Imigangatho eyenziwe ngezitena okanye ikonkhriti igcina kukho ubushushu obufanelekileyo endlwini yakho njengoko ikwazi ukubizela ubushushu emini ibukhuphe kancinci ebusuku. Le migangatho mayingafakwa ikhaphethi njengoko ikonkhriti ibizela ubushushu obuninzi kunomgangatho onekhaphethi.
- Ubushushu buphuma kwiiglasi zeefestile ngokukhawuleza kangangokuphindwe kalishumi kunakwidonga elambathisiweyo, ke ngoko zivule iikhethini emini (vumela ukukhanya nobushushu bendalo bungene) uzivale ebusuku (ugcine ubushushu ngaphakathi).

- Tyala umthi onamagqabi avuthulukayo everandini okanye eyadini. Ehlotyeni le mithi inamagqabi inika umthunzi indlu yakho. Xa amagqabi evuthulukile ekwindla, lo mthi uze uyayivumela imitha yelanga ingene (ngeefestile) endlwini ngezi nyanga zibandayo.
- Uphahla lwezinki luphulukana nobushushu obuninzi ekwindla yaye litshisa kakhulu ehlotyeni. Lwambathise ngento ipahla ulipeyinte mhlophe (lifane nokukhanya ke ngoko liphole) okanye sebenzisa i-alumuniyam okanye ezinye izinto zokuxhoma upahla.
- Isilingi nokwambathisa upahla kwindlu encinci kungaphungula amandla owasebenzisayo nge-124 kWh yonke ngenyanga – wonge malunga nama-R50,00 ngenyanga.



## Ukufaka isilingi ngamanyathelo alula amathandathu



1. Khangela imingxuma enokuvuza ephahleni. Faka itha (ifumaneka kwiivenkile zeentsimbi) kule mingxunya. Sebenzisa iiplastiki ukuvala imingxunya ephakathi kodonga nophahla.
2. Sebenzisa isikhonkwane ukuxhoma ucingo ukusuka kwelinye icala legumbi ukuya kwelinye – malunga nama-30 cm phakathi kwawo. Isilingi iza kuhlala phezu kwala macingo.
3. Beka iikhadibodi ezimbini okanye ezintathu zokwambathisa phakathi kwala macingo nophahla. Ungalibali ukushiya isithuba phakathi kophahla nezi khadibodi njengoko esi sithuba somoya sanceda ekugcineni ubushushu.
4. Sebenzisa isincamathelisi seplastiki ukudibanisa iiplastiki (sebenzisa iplastiki ezimnyama zenkunkuma okanye uqokelele iiplastiki ezininzi uzikrazule uzidibanise wenze iplastiki enkulu). Beka ezi plastiki phantsi kwekhadibodi noringo. Makungabikho mingxunya kule plastiki.
5. Bethela umaleko ube mnye wekhadibodi phantsi kweplastiki. Ungayipeyinta le khadibodi ukuba uyathanda.
6. Ungasebenzisa amaplanga anciphileyo ukwenzela ukuba isilingi ingabheni.

Ibonelelwe nguWadi S The Energy Book (Sustainable Energy Africa)

## Ukwambathisa indlu yakho

Ukwambathisa phakathi kophahla nesilingi kunceda kakhulu ukugcina indlu yakho ifudumele ebusika ipholile ehlotyeni. Kutshiphu kwaye kulula kakhulu nokukwenza. Iinzuzo zokwambathisa indlu ziye zingacaci xa kolekwe kakhulu. Ke ngoko nokuba kuncinci ukwambathisa kungcono kunongembathisi konke konke. Ukutyabeka iindonga konga imali kakhulu njengoko kuphungula ukufuma ezindongeni.

Sebenzisa izinto ezingenabungozi nezihlaziyekayo xa usambathisa. Ikhadibodi ilungile kodwa iyawagcina amanzi kwaye itsha lula. Ukunkxuza ikhadibodi kwiboroni namanzi kwenza ukuba ingatshi lula kwaye izilwe nezinambuzane. Iboron ingaboliswa ziintsholongwane kwaye ayinabungozi xa ithelekiswa nezinye iimveliso ezikhoyo. Yilinde ikhadibhodi yome phambi kokuba uyisebenzise. Yibeke tyaba phantsi eplastikini uyicinezele ngamatye okanye izitena ezinzima ukuze icombuluke phambi kokuba uyibeke kumphakathi wesilingi.

I-vermiculite yinto yokwambathisa ekungenabungozi ukuyisebenzisa, iyawulwa umlilo kwaye ikhona kwiivenkile ezithengisa iintsimbi ekuhlaleni. Ezinye izinto zokwambathisa ezikhoyo kwiivenkile zeentsimbi okanye iindawo zezinto zokwakha ngamacangca ohlobo oluthile lwesamente ekuthiwa yi-gypsum, irhonya, nephepha le-alumuniyam eliqinileyo.

Ungadibanisa kunye neebhotile zeplastiki uzibeke phakathi kwesilingi nophahla. Zona zilwa izinambuzane kwaye zibamba nomoya zigcine nobushushu kakuhle.

Foto: Mark Lewis



*Ivermiculite ilunge kakhulu ekwambathiseni.*

### Ukuqwalasela 'amandla aqulathiweyo'

Imveliso nganye esetyenzisiweyo ekwakheni indlu yethu ifune amandla ukuyenza nokuyihambisa. La kuthiwa 'ngamandla aqulathiweyo'. Xa usakha okanye usandisa okanye uhlaziya cinga ngokuphinda uzisebenzise kwakhona izinto zokwakha ezingentshanga. Oku konga amandla, amanzi, inkunkuma nemali. Olu luhlu lungezantsi lukukrobisa kumyinge wamandla afunekayo ukuvelisa ezi zinto.

#### Amandla afunekayo (nge-kWh) ukwenza itoni enye ye:

Iplastiki	45 000	I-alumuniyam	27 000
Ikopolo	15 000	Iintsimbi	13 200
Isamente	2 200	Izitena	200-800 kuxhomekeka kulo nto yenziwayo
Amatye	200		

The Greenhouse Project, 2005

### Ukwenzela amandla ikhaya lakho usebenzisa amandla ahlaziyekayo



Indlu eqhelekileyo eMzantsi Afrika ifumana ngaphezu kwama-600 kWh okukhanya kwelanga ngosuku – ngaphezulu kakhulu kunokuba inokusebenzisa. Iiseli ze-photovoltaic (PV) ziguqula ukukhanya kwelanga zikwenze umbane othi ugcinwe yibhetri. Izixhotyana ze-PV zenziwe ngento ehambisa umbane kancinci kuqheleke ukuba ibe yisilikhoni efakwa iikhemikhali ukuze umphantsi nomphezulu zikhabane. Umsinga wombane wenziwa ngala macala ombane akhabanayo ohambe uyekugcinwe kwindawo yombane engaphandle. Ibhethri iyawugcine umbane ude ufuneka. I-PV encinci yasekhaya ingakhanyisa izibane ezibini iiyure ezine nomabonakude omcinci obonisa mhlophe namnyama okanye unomathotholo iiyure ezimbini ngelanga. Iindleko zokuqala zokuthenga i-PV neebhetri zisephezulu, kwakhona esi sixhobo asinakumelana nezinto ezifuna umbane kakhulu ezifana nokupheka okanye ukufudumeza.

Ukuba ufuna ikhaya lakho lisebenzisa amandla endalo, eyona ndlela ifikelekayo kukuthenga umbane wendalo osuka kumzi-mveliso omkhulu ovelisa umbane owenziwa ngezinto ezihlaziyekayo xa sele ukhona (imizi-mveliso efana nefama yamaphiko omoya yaseDarling). Nangona uza kuqhubekeka ufumana umbane wakho kule bhokisi yoqhagamshelwano ikhoyo, uza kuhlawulela ngezavenge lo mbane (ixabiso elingaphezulwanga kwelombane oqhelekileyo) kwaye uza kufumana isiqinisekiso esibonisa ukuba umbane uwuthenge kwindawo ewuhlaziyayo.

## Uthutho: Ukuhamba lula

### Eyona ingcono

Ukuhamba ngeenyawo, ngebhayisekile okanye ukusebenzisa izithuthi zikawonke-wonke zezona ndlela zokuhamba zikulungeleyo okusingqongileyo. Kwaye zezona zitshiphu. Kodwa iindlela ezicetywe ngayo iidolophu aziyiselanga so into yokucingela abantu abahamba ngeenyawo nangebhayisekile, izithuthi zikawonke-wonke zona zixhaswa kancinci ngemali, oku kubangela ukuba umthamo uzohlule, ukungaxibelelani kakuhle ezindleleni neminye imibandela yezokhuseleko. Indlela ezintsha zokuqwalasela uthutho ezidolophini sezicetyiwe kodwa kuya kuthatha ithuba ukuziphumeza. Okwangoku amanyathelo abalulekileyo abaqhubi abanokuwathatha ukuze baqhube kakuhle.

### Izithuthi zikawonke-wonke

Funa ulwazi ngezithuthi zikawonke-wonke engingqini yakho.

#### I-CapeMetrorail

Ulwazi ngethayimthebhuli, imali neendlela: [www.capemetrorail.co.za](http://www.capemetrorail.co.za)

Ulwazi oluthe vetshe qhagamshelana nale nombolo yasimahla, inombolo yamaxesha onke

Ulwazi gabalala nge-Metrorail: 0800 65 64 63

Ulwaphulo-mthetho kwa-metrorail: 0800 65 64 63

#### Iinkonzo zeebhasi zakwa-Golden Arrow

Amaxesha nolwazi: [www.gabs.co.za](http://www.gabs.co.za).

Ulwazi oluthe vetshe qhagamshelana nezi nombolo zilandelayo:

I-ofisi enkulu: (021) 507 8800

Imibuzo nezikhalazo: 0801 21 21 11 no 0800 65 64 63

### Ukuhamba ngeenyawo nangebhayisekile

Nanini na ufumana ithuba cinga ngokuhamba ngeenyawo okanye ibhayisekile endaweni yemoto yakho. Oku konga imali kwaye kuyimpilo.

### Izithuthi ezingatyi mandla

Ukuba ucinga ngokuthenga imoto khangela uhlobo olungatyi mafutha kakhulu – imoto oyikhethileyo ingenza umahluko obonakalayo emhlabeni. Kumaxabiso epetroli nawedizili enyuka rhoqo oku kungakongela imali ebonakalayo ekuhambeni kweminyaka.

## Ukukhwelisana ngeemoto

Ukukhwelisana xa kusukwa naxa kusiyiwa umsebenzini kungaphungula ngokukhawuleza amafutha owasebenzisayo ngenyanga. Oku kuphumza ingqondo kwaye kwakha nobuhlobo. Ukukhwelisa xa kusiyiwa esikolweni nako kungaqwalaselwa.

## Ukuqhuba phucukileyo okanye ukuqhuba ukhathalele indalo

Ukugcina imoto yakho isemgangathweni nokuqhuba ngendlela engatyi mafutha kakhulu kunganendima enkulu kumafutha asetyenziswa yimoto.

- Yixilongise imoto yakho rhoqo (emva kwama-10 000 km ubuncikane)
- Qinisekisa ukuba amavili anomoya ofanelekileyo (ngokwemilinganiselo yakowayo). Amavili angagcwelanga kakuhle angayinyusa indlela eyitya ngawo amafutha imoto nge-8%. QAPHELA: Ivili elinomoya omcinci kakhulu alinyusi kuphela indlela etya ngayo amafutha koko nalo ivili liphela ngokukhawuleza.
- Sebenzisa i-oli engena kuzo zonke kwinjini yakho kuba iyenza ithambe.
- Tshintshela kumavili anemisonto ebusisakha-sangqa kuba ahamba lula kwaye ayahlala kunanemisonto enqamlezileyo.
- Nyusa isantya kancinci, utshintshe iigiyeri xa kufanelekile. Imoto ihamba ngokufanelekileyo xa ingadumeli phezulu.
- Musa ukumana uyicima xa uqhuba. Rhoqo xa ubamba iziqhoboshi, amandla akhutshwa kukunyusa isantya ayilahleko. Ziqikelele iirobhoti uqhoboshe kancinci – oku kungakongela amafutha anokuba yi-18% ngetanki.
- Sukubalekisa. Ukubaleka nge-110 km ngeyure, imoto isebenzisa amafutha afika kuma-25% ngaphezulu kunaxa ihamba ngama-90km ngeyure.
- Ezi ntsimbi zilapha phezulu emotweni kunye neefestile ezivuliweyo ziyenza imoto ukuba ibanjwe ngumoya kwaye itye namafutha ngama-20%.
- Umoya obandayo wemoto utya malunga ne-10% ngaphezulu xa uvuliwe.
- Sebenzisa incwadana yakho ubhale amafutha owathenigileyo neekhilometha ozihambileyo ukuze uzibekele imimiselo emitsha.

## Ukhuseleko ekhaya

### Ukulungisa iingcingo zombane zeplagi

Iplagi engaqhagamshelwanga ngokufanelekileyo ingabangela ukukhatywa ngumbane, ukutsha, umlilo. Ukuqhagamshela iingcingo zombane zeplagi kukufaka iingcingo zombane kwiindawo zazo ezifanelekileyo (jonga umfanekiso), ujike izikrifu ukubamba ezi ngcingo zintathu. Zakuba ziqinisiwe, zitsale kancinci ukuqinisekisa ukuba azinakuphuncuka.

### Ukukhangela indawo evuza igesi

Kubalulekile ukujonga iindawo ezivuzayo kumatanki egesi, imibhobho neendawo ekudityaniswe kuzo. Ukwenza oku, cima itanki legesi. Jonga iindawo ekudityaniswe kuzo. Vulela igesi kancinci, uqabe ezi ndawo kudityaniswe kuzo ngamanzi anesepha okanye isepha engamanzi. Kuza kubakho amaqamza egwebu apho kuvuza khona. Lise itanki lakho kumthengisi wegisi alijonge, alitshintshe okanye alilungise.



## Ukuhamba-hamba komoya

Xa utshisa nokuba sesiphi na isibaso – igesi, iparafini, amalahle okanye iinkuni – hlala uvule icango okanye ifestile ukuqinisekisa ukuba igumbi linomoya owaneleyo. Umsi osuka kwisibaso ungabangela ukugula kanti nokufa.

## Imibuzwana ngokhuseleko ekhaya



Umbane	Ewe	Hayi
lingcingo zombane zibekwa kude kakhulu kwizinto ezidala ubushushu, ezifana nomlilo nezitovu okanye amakhandlela.		
Zonke iingcingo zigqunywe akukho cingo lekopolu livelileyo.		
lingcingo zethu zombane azihambi phantsi kwekaphethi ekhayeni lethu.		
Akubikho zixhobo zombane zingaphezulu esithathwini ezikwiplagi enye ngexesha.		
Asinazixhobo zombane zikwigumbi lokuhlambela okanye kufutshane namanzi.		
Bonke abantu ekhaya bayazi ukuba akufuneki konke ukutsala iplagi kwisokethi ingacinywanga, okanye batsale intambo yombane.		
Bonke abantu ekhaya bayazi ukuba isixhobo sombane masisuswe kwiplagi (sicinywe) phambi kokuba silungiswe.		
Siyazicima izibane phambi kokutshintsha ibhalbhu.		
<b>AMANQAKU EWONKE</b>		

Ukuba uphendule ngo-HAYI kweminye yemibuzo, kufuneka ucinge ngala manyathelo alandelayo:

- Zibeke kude iingcingo ebushushwini njengoko zinokutshisa zibangele nomlilo.
- Susa iintambo ezihamba phantsi kwekaphethi njengoko iingcingo ezonakeleyo nezivele ngaphandle zinokwenza umlilo.
- Thenga itheyiphu yokwambathisa ugqume zonke iingcingo zekopolu ezingaphandle ngokubhijela ngetheyiphu ezi ngcingo ngokuphinda-phinda.
- Ukuba unezixhobo ezininzi ezisebenzisa isokethi enye, zikhuphe ezinye iiplagi uzifake kuphela xa usisebenzisa eso sixhobo. Zama uqinisekise ukuba awufakanga ezingaphezulu kwisithathu kwiplagi enye ngexesha.
- Amanzi ahambisa umbane kwaye ukusebenzisa umbane kwigumbi lokuhlambela okanye ngasemanzini kungabangela ukukhatywa ngumbane.
- Sicime isixhobo sombane phambi kokuba ukhuphe iplagi kwaye soloko usicima isibane phambi kokutshintsha ibhalbhu.
- Ungaze ufake iingcingo ezingagqunywanga okanye iminwe kwisokethi. Ukubamba iingcingo zesixhobo sombane esisavuthayo kungakukhabisa ngombane.

Iparafini	Ewe	Hayi
Izitovu nezibane zethu zeparafini zicocekile kwaye zivutha kakuhle.		
Iparafini ekhaya igcinwa ngokukhuselekileyo ekhabhathini okanye eplastikini exhonywa esikhonkwaneni esiphezulu esingenakufikelelwa ngabantwana.		
Iibhotile zethu zeparafini ziphawulwe cacileyo ayigalelwa kwibhotile zesiselo okanye zebisi abanokuzibhidanisa abantwana.		
Sisebenzisa ifanele (okanye sisike umlomo webhotile yeplastiki yesiselo) hayi ikomityi xa sisitha iparafini esibaneni nasesitovini.		
Isitovu nezibane zethu zeparafini zisoloko zikwindawo engathambekanga nezinzileyo kude ebantwaneni abadlalayo.		
Izibane zethu zeparafini zisoloko zigqunywe ngeglesi yesibane azivuthi zingagqunywanga.		
Iparafini yethu ithiwa entweni ecocekileyo kwaye asiyixubi konke nezinye izibaso ezifana nesipiriti, i-oli okanye ipetroli.		

Ukuba uphendule ngo-HAYI kweminye yale mibuzo, kufuneka ucinge ngamanye ala manyathelo alandelayo:

- Gcina izixhobo zakho zombane zicocekile ngalo lonke ixesha. Izixhobo ezimdaka okanye ezinengxaki zifutha ziqhume kakhulu, oku kungabangela isifuba, iphika, ukukhohlela okanye inyumoniya kubantu bakowenu.
- Soloko uyigcina kwindawo efanelekileyo iparafini kude ebantwaneni. Iibhotile kufuneka ziphawulwe cacileyo ukuze bazi ukuba mabangaseli. Iifanele ezisetyenziswe ukutha iparafini ezitovini nasezibaneni mazigcinwe neparafini. Sukusebenzisa imagi okanye ikomityi kuba umntu angasela ngayo ngempazamo.
- Indawo emtyaba nezinzileyo ingaqanda ukuba izitovu nezibane zingawi zenze imililo. Kwakhona qinisekisa ukuba izixhobo zombane zikude ebantwaneni abanokuzigila ngempazamo.
- Imbiza enkulu kwisitovu esincinci ingabangela ukuba isitovu singazinzi siwe sibangele umlilo.
- Ukuqinisekisa ukuba izibane zakho zigqunyiwe kunganqanda imililo nokutsha.
- Soloko usebenzisa ibhotile ecocekileyo eparafinini. Iparafini engcolileyo yenza umsi omdaka noyingozi.
- UNGAZE uthatheke ufune ukuxuba iparafini nezinye izibaso ezifana ne-oli nesipiriti. Ukuxuba izibaso kungabangela udubulo kwaye kuyingozi kakhulu. Ipetroli exutywe neparafini inobungozi kakhulu ke yona. Ngamanye amaxesha iparafini ikhe ixutywe ngempazamo nentwana yepetroli enokuba ishiyekele ezantsi kwitanki lesithuthi. Yinukise iparafini yakho ukuqinisekisa ukuba ayinapetroli kuyo. Ukuba inombala obupinkirha yibuyisele ngokukhawuleza kule ndawo ubuyithenga kuyo ubaxelele ukuba mabaqhagamshelana nalapho bayithenga khona. Ipetroli itsha ngokukhawuleza kuneparafini kwaye izibaso zixutywe zingabanga udubulo.
- Ijeli yepetroli yiyona ikhuselekileyo kwaye yithathele ingqalelo. Nangona ixabisa kakhulu kuneparafini, njengoko iyijeli ayiseleki kwaye ayichitheki, oku kunciphisa okuba ityiwe nemililo.

Amakhandlela, amalahle neenkuni	Ewe	Hayi
Amakhandlela ekhayeni lam afakwa aqine kwiziphatho zawo ngamaxesha onke.		
Amakhandlela abekwa kude kunefestile ezivuliweyo neekhethini.		
Xa sibasa endlwini sinetshimini yokukhuphela umsi ngaphandle.		
Sisoloko sisebenzisa iinkuni ezomileyo kwimililo yethu okanye namalahle angaqhumi kakhulu.		
Xa sibasa phandle siyaqinisekisa ukuba kukhuseke kakuhle nokuba umlilo ucimile phambi kokuba singene ngaphakathi okanye sihambe.		
<b>AMANQAKU EWONKE</b>		

Ukuba uphendule ngo-HAYI kweminye yale mibuzo, kufuneka ucinge ngamanye ala manyathelo alandelayo:

- Thenga okanye wenze iziphatho zamakhandlela ezomeleleyo ukulungiselela amakhandlela avuthayo kunokuwancamathelisa ngamafutha wawo epleyitini okanye etafileni apho anokuwa lula.
- Ikhandlela lingafakwa nakwiglasi endala egalelwe isanti ukuze lime ngqo. Isanti iya kunceda nokucima umlimo xa kukho umntu oligilileyo elo khandlela.
- Beka amakhandlela kwiindawo ezikhuselekileyo. Ungqameko lwefestile zindawo ezingalunganga emakhandleleni njengoko umoya unokuwawisa. Umlilo ungabangela ukuba nekhethini zilumekeke.
- Umsi womlilo unganobungozi kakhulu – abantu abaninzi minyaka le bayafa ngenxa yongcoliseko lomoya olusendlwini, ingakumbi abantwana. Soloko uqinisekisa ukuba ikhona itshimini yokukhupha umsi endlwini. Basa iinkuni ezomileyo okanye qinisekisa ukuba uthenga amalahlle angaqhumi kakhulu kumthengisi wakho wamalahlle.
- Iya kukunceda nento yokuba ukhangele iinkuni ezonga ieneji nesitovu samalahle esingasebenzi mafutha maninzi, nesingakhuphi msi mninzi ukuze wonge imalana.
- Qinisekisa ukuba indlu inomoya owaneleyo ukuba usebenzisa imbawula endlwini. Soloko uyibasela phandle imbawula uyingenise ngaphakathi xa sele amalahlle ebomvu. Umlilo oguqulweyo – ukubeka amalahlle ngaphantsi ubeke amaphepha neenkuni ngaphezulu – awuqhumi kakhulu.
- Xa uphandle, ingqame okanye ikhusi linqanda umlilo ukuba unganweni yaye ungaxaki.

Igesi	Ewe	Hayi
Xa ndibasa isitovu okanye isibane segesi ndiqala ndiqhwithe ngematshisi phambi kokuba ndivule igesi.		
Amatanki egesi ethu agcinwa kude kunezinto ezikhupha ubushushu, ezifana nomlilo, isibane, isifudumezi okanye isitovu.		
Sithenga ugesi wethu kumthengisi owaziwayo ngokhuseleko.		
Siyaziphonononga izixhobo zethu zegesi nomthengisi wethu wegisi ukuba azi-sonwabisanga.		
Siyiphonononga rhoqo imibhobho edibanisayo, irabha zokutywina, iibhotile nezixhobo zikagesi ukukhangela ukugqabhuka okanye ukuvuza sisitshintshe okanye sisilungise isixhobo ukuba sibhaqe indawo evuzayo.		
Isitshixo sebhote kagesi sibekwa khuselekileyo kude ebantwaneni.		
<b>AMANQAKU EWONKE</b>		

Ukuba uphendule ngo-HAYI kweminye yale mibuzo, kufuneka ucinge ngamanye ala manyathelo alandelayo:

- Qinisekisa ukuba itanki lakho legesi neendawo elidityaniswe kuzo zikwimeko efanelekileyo ngokujonga indawo ezivuzayo (jonga apha ngasentla) utshintshe okanye ulungise ngokukhawuleza ukuba kukho iindawo ezivuzayo ezibhaqiweyo.
- Musa ukusebenzisa itanki legesi elalike latsha. Ukuba awuqinisekanga ngetanki lakho okanye isixhobo sikagesi, zibuze kumthengisi wakho phambi kokuba uzisebenzise.
- Soloko uthenga kumthengisi obhalisiweyo nowaziwayo ngokhuseleko. Oku kungabhalwa ngaphandle kweli ziko lithengisa ugesi.

## Ukujongana neengozi

### Ukuba umntu ukhetywa ngumbane ekhaya

1. Cima kwindawo ekucinywa kuvulwe kuyo umbane. Ukuba oku akwenzeki, wucime umbane kwiplagi esedongeni apho isixhobo eso sifakwe khona. Ukuba kungenzeka, sebenzisa into engatsali mbane efana nomtshayelo okanye isitulo (umthi okanye iplastiki) ukucima umbane kwiplagi.
2. Ukuba umbane awucimeki, sukulibamba ixhoba kuba nawe uya kukhetywa. Endaweni yoko mtsale ngempahla umsuse. Ukuba iimpahla zakhe zimanzi, zikhusele ngokunxiba izinxibo zezandla zerabha ezomileyo, iphephandaba okanye iplastiki.
3. Lityhalele kude ixhoba kule ndawo inombane ngomtshayelo okanye ngesitulo.
4. Vavanya indlela ixhoba eliphefumla ngayo (liyekile okanye limane liyeka). Jonga ukubetha kwentliziyo ujonge ukuba ixhoba lisezingqondweni na. Biza i-ambulensi ukuba akekho zingqondweni, akaphefumli okanye nentliziyo ayibethi. Kubalulekile ukuzazi indlela ezilula zoncendo lokuqala, ezifana nokuvusa ngokumphefumlela emlonyeni nokuphulula intliziyo.

### Ukuba umntu usele iparafini ekhaya

1. Ukuba umntu usele iparafini, sukuzama ukumgabhisisa. Ivumba lingangena emiphungeni abe nenyumoniya.
2. Ungabaniki into yokusela okanye yokutya. Sukubavumela ukuba balale phantsi. Bamise ngeenyawo okanye bahlale ngokuthe nkqo.
3. Base ekliniki okanye esibhedlela ngokukhawuleza uphathe la bhotile.

### Omawukwenze xa kukho umlilo

Imililo ayivuthi ingekho i-oksijini. Indlela engcono yokucima umlilo kukugalela isanti okanye uwuthi wambu ngengubo (uvale i-oksijini).

1. Soloko unebhakethe elikhulu lesanti okanye ingubo enkulu enoboya kufutshane nomlilo wakho okanye isitovu. Xa kusitsha, galela isanti okanye uphose ingubo kanye phezu komlilo. Isicima-mlilo singcono kakhulu.
2. Ungaze usebenzise amanzi kumlilo owenziwe sisibaso kuba oku kungawunwenisa umlilo okanye kukukhabise ngombane.
3. Ukuba imbiza iyatsha ngaphakathi, yivale njengoko umlilo ungakwazi ukuvutha xa ingekho i-oksijini.
4. Ukuba impahla zakho ziyatsha, sukubaleka. YIMA, UWE, ugqume ubuso bakho, UZIQENGQE emhlabeni ukucima amadangatye.



5. Ukuba ulusu lwakho lutshile, pholisa le ndawo itshileyo ngamanzi ze uye ekliniki okanye esibhedlele.
6. Ukuba indlu yakho iyatsha, phuma ngokukhawuleza. Khasa ngezandla namadolo akho uye kumnyango okufutshane. Umoya oshushu (umsi) uyenyuka ke ngoko ukukhasa okanye ukugoba kuya kukunceda ukuba ube ngezantsi kumsi oyingozi kuncede ukunqada ukutsarhwa ngenxa yokunqongophala kwe-oksijini.

**Ukunyanda izilonda zokutsha ezincinci.**

Faka le ndawo itshileyo emanzini abandayo imizuzu elishumi. Ungathambisi Vaseline, oli okanye amanye amafutha esilondeni njengoko siza kwanda. Mse ekliniki okanye esibhedlele ukuba isilonda singaphezulu kwesandla.

**Iinombolo zikaxakeka**

Khangela iinombolo ezichanekileyo zikaxakeka zengingqi yakho. Zigcine kwindawo esekuhleni apha onke amalungu osapho anokuzifumana lula khona, uxelele bonke abantu bekhaya apho zikhoyo nokuba zezantoni na. Yazi apho ikhoyo eyona fowuni ikufutshane.

**Iinkonzo zikaXakake zaseKapa**

<b>Ezomlilo</b>	<b>107</b>
<b>Amapolisa</b>	<b>10111</b>
<b>I-ambulensi</b>	<b>10177</b>
<b>Inombolo kaxakeka yeselula yakwa-Cell C, Vodacom no-MTN</b>	<b>112</b>
<b>Iziko loLwazi ngeTyhefu laseTygerberg</b>	<b>021 931 6129</b>
<b>Iziko leTyhefu lesiBhedlele iRed Cross</b>	<b>021 689 5227</b>

**Iinombolo zikaxakeka jikelele**

**IsiKhululo seziCima-mlilo esikufutshane**

**Inombolo kaxakeka yesiKhululo samaPolisa engingqi yakho**

**Igumbi lengozi lekliniki okanye isibhedlele sengingqi yakho**

# IINKCUKACHA ZOQHAGAMSHELWANO NEZIBONELELO EZIKHOYO

## Imibuzo enxulumene nombane

Imibuzo gabalala kwiiNkonzo zoMbane zesiXeko saseKapa	0800 22 04 40
Inombolo yasimhla yokunceda abathengi ngesixhobo sokulinganisa umbane ohlawulelwe kwangaphambili.	0800 22 04 40
Imibuzo nge-akhawunti/ukunqunqanyiswa kombane ngenxa yokungahlawuli	0860 10 30 89
Imibuzo ngendlela imitha yamanzi ebale ngayo	0860 10 30 89
Imibuzo ngombane omtsha/umbane otshintshiweyo	0800 22 04 40

Ulwazi oluthe vetshe ngamaxabiso ombane, ukufakelwa kweemitha, ukuvavanywa kwemitha neenkonzo zombane, yiya kwewebhusayithi yesiXeko seKapa ethi: [www.capetown.gov.za](http://www.capetown.gov.za). Cofa ku-'IsiXeko Sakho'. Iqhosha elithi 'Amaxabiso kwiintanethi' likunika uluhlu olucacisiweyo ngamaxabiso emakhaya nezinye iinkonzo ezifanayo phantsi kwendawo ethi 'Isishwankathelo Ngombane (kundabakanya amaxabiso ombane wezinto ngezinto)'

## Ukuba uwufumana kwa-Eskom

Imibuzo gabala ngeeNkonzo zoMbane zakwa-Eskom okanye yiya kwa- <a href="http://www.eskom.co.za">www.eskom.co.za</a>	0860 03 75 66
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## Imibuzo ngeengxaki zonke

<b>liNkonzo zikaXakeka</b>	<b>107</b>
<b>liyure ezingama-24</b>	<b>0860 10 30 54</b>

## Ukuxela ukucima kombane

Athlone	0800 22 04 40
Bishopscourt	0800 22 04 40
Bonteheuwel	0800 22 04 40
Camps Bay	0800 22 04 40
City Bowl	0800 22 04 40
Claremont	0800 22 04 40
Constantia	0800 22 04 40
Epping Industria	0800 22 04 40
Fish Hoek	0800 22 04 40
Grassy Park	0800 22 04 40
Guguletu	0800 22 04 40
Hout Bay	0800 22 04 40
Kommetjie	0800 22 04 40
Bellville	0800 22 04 40
Brackenfell	0800 22 04 40
Durbanville	0800 22 04 40
Edgemean	0800 22 04 40
Goodwood	0800 22 04 40
Gordon's Bay	0800 22 04 40
Atlantis	0800 22 04 40
Bloubergstrand	0800 22 04 40

Belhar	0860 03 75 66*
Bishop Lavis	0860 03 75 66*
Blackheath	0860 03 75 66*
Blue Downs	0860 03 75 66*
Cravenby	0860 03 75 66*
Eerste River	0860 03 75 66*
Elsies River	0860 03 75 66*
Khayelitsha	0860 03 75 66*

\* *Le mimandla ibonelelwa ngombane nguEskom.*

## Ulwazi ngokusebenzisa amandla

Umbane wesiXeko saseKapa, inombolo yomnxeba, 0800 22 04 40

I-imeyile: [customersupport@capetown.gov.za](mailto:customersupport@capetown.gov.za)

Yiya kwa: [www.eskomdsm.co.za](http://www.eskomdsm.co.za) xa ufuna amanye amacebiso okonga umbane

I-The Green House Project unolwazi olululutho ngendlela zokusebenzisa umbane ngokufanelekileyo nokwakha okuzinzileyo, inombolo yomnxeba. (011) 720 3773

I-intanethi: [www.greenhouse.org.za](http://www.greenhouse.org.za)

## Ulwazi ngokhuseleko lwesibaso

Paraffin Safety Association, inombolo yomnxeba (021) 418 6330

LP Gas Safety Association, inombolo yomnxeba (021) 531 5785

Programme for Basic Energy and Conservation, inombolo yomnxeba (011) 339 6633

SABS Regulatory (for checking safety standards of appliances) inombolo yomnxeba (012) 428 6375



## Ukufunda le ncwadi kuza kukunceda ukuba

- Wonge imali ngokuthi ulawule ikhaya lakho ngendlela eyiyo.
- Uphucule ukhuseleko ekhaya.
- Ukuqonda imiba ebalulekileyo yokusingqongileyo esijongene nayo xa sisonke.
- Ukuqonda imirhumo yeSixeko.
- Ukwazi ukuba mawuye phi xa ufuna uncedo okanye iingcebiso ngeenkono zeSixeko.
- Ukuzama obunye ubuchwepheshe obufana nezishushubezi zamanzi ezisebenza ngelanga.
- Ukutyebisa ulwazi lwakho nokonwabela amathala endalo akwimimandla yethu.
- Ufunde ukulungisa into evuzayo, ukutshintsha iglowubhu yesibane, ukufakela isilingi, ukujika inkunkuma yakho ibe ngumgquba kunye nezinye izinto ezincinci eziya kukunceda ukuba uphile ngokukhuselekileyo, ulondolozel okusingqongileyo kunye nemali yakho.

